APPENDIX I: IMPLEMENTATION AND RESIDUAL RISK EVALUATION FOR ONONDAGA LAKE

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ACRONYMS AND ABBREVIATIONS

AGC	(New York State) Annual Guideline Concentration
AIHA	American Industrial Hygiene Association
BERA	baseline ecological risk assessment
BLS	Bureau of Labor Statistics
cm	centimeter(s)
CPOI	chemical parameter of interest
CSTR	continuously stirred tank reactor
CY	cubic yard
FMCSA	Federal Motor Carrier Safety Administration
ER-L	effects range-low
ER-M	effects range-median
FS	feasibility study
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
ILWD	in-lake waste deposit
KM	kilometer(s)
LOAEL	lowest-observed-adverse effect level
Metro Plant	Onondaga County Metropolitan Wastewater Treatment Plant
mg/m^3	milligram(s) per cubic meter
NAPL	non-aqueous phase liquids
NCP	National Contingency Plan
ng/kg	nanogram(s) per kilogram
NOAEL	no-observed-adverse-effect-level
NRC	National Research Council
NWS	National Weather Service
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCDD/PCDF	polychlorinated dibenzo-*p*-dioxin/polychlorinated dibenzofuran
PEC	probable effect concentration

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ACRONYMS AND ABBREVIATIONS (CONTINUED)

PECQ	probable effects concentration quotient
PEL	permissible exposure limit
PPE	personal protective equipment
RAO	remedial action objective
RfC	reference concentration
RI	remedial investigation
SCA	sediment consolidation area
SEC	sediment effects concentration
SGC	(New York State) Short-term Guideline Concentration
SMU	sediment management unit
SWAC	surface-area weighted average concentration
SWQS	(New York State) Surface Water Quality Standards
TAGM	Technical and Administrative Guidance Memorandum
TMDL	total maximum daily loads
TOGS	Technical and Operational Guidance
TRV	toxicity reference value
USDOL	United States Department of Labor
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WQI	Water Quality Impact

EXECUTIVE SUMMARY

This appendix summarizes the human health and ecological risk considerations relevant to the detailed analysis of lake-wide alternatives for Onondaga Lake, and addresses remedy implementation risks as part of short-term effectiveness and residual risks as part of overall protectiveness and long-term effectiveness, consistent with United States Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC) regulations and guidance.

Remedy Implementation Risks

The remedy implementation risk elements evaluated included:

- On-site worker accidents that may occur during construction and remediation operations;
- Transportation accidents and spills that may occur during transport of large quantities of site-related materials such as dredged material, clean backfill material, and capping material;
- Impact of resuspension of in-lake sediments during dredging and capping on lake water quality;
- Impact of resuspension of in-lake sediments during dredging and capping on the natural recovery of the profundal sediments;
- Impact of discharging effluent from sediment dewatering operations back into the lake;
- Air quality impacts during dredging and materials handling in the sediment consolidation area (SCA);
- Temporary loss of lake habitat due to the physical removal of benthic macroinvertebrate communities and/or their habitat during dredging or burial of organisms under clean cap/backfill materials; and
- Quality of life impacts, including potential restricted use of areas in the vicinity of the lake and increased local truck traffic transporting site-related materials.

A comparative evaluation of these risk elements was conducted for the lake-wide alternatives; in addition, the evaluation of transportation accidents and air emissions was applied to the analysis of on-site consolidation vs. off-site disposal options presented in Section 4 of the feasibility study (FS) report.

The comparative evaluation is based on a qualitative evaluation of risks for several scenarios that are difficult to quantify, including discharging effluent, temporary loss of lake habitat, and quality of life impacts. In contrast, there are other scenarios which are easier to quantify, and the comparative evaluation is based on a quantitative evaluation of risks for on-site worker accidents, transportation accidents and spills, impact of resuspension, impact of resuspension of in-lake sediments during dredging on the natural recovery of the profundal sediments, and air quality impacts during dredging and materials handling. The quantification of these implementation risks is based on assumptions for each of the specifics associated with each activity. It is recognized that there are uncertainties in the quantification of potential risks associated with activities in the remedy; however, these uncertainties are consistent with the level of uncertainty inherent in an FS, as opposed to the remedial design stage. As an example, the quantification of truck traffic and the potential for accidents during transportation is based on estimates of material quantities that also provide a partial basis for estimating remediation costs in the FS. The rationale for using quantitative evaluations is presented in Section I.2.1.1.

With the exception of potential impacts of dredging on the recovery of the profundal sediments and the impacts of air emissions, a similar pattern of results was observed for each risk element. In general, the predicted measure of risk increases gradually from Alternatives B, C, D, D2, and F1 to Alternatives F2, F3, F4, G, and H, with a sharp increase in going from Alternative H to the high dredged volume Alternatives E, I, and J. For example, the relative difference in short term risk measures between Alternatives F1 and B for transportation accidents is a factor of 2.0, and the relative difference between Alternatives H and B is a factor of 4.0, while the relative difference between Alternatives J and B is a factor of 19. With respect to the potential impacts of dredging on the recovery of the profundal sediments, the predicted sediment flux and mercury concentration values for all alternatives were found to lie within the range of uncertainty in future background conditions, so that no basis for meaningful comparison of alternatives could be established.

For longer term cancer and noncancer risks associated with the air emissions associated with the point of dredge and the SCA, based on average sediment concentrations, the predicted concentrations at the point of maximum exposure were below health-based benchmarks for cancer risk and odor thresholds for all alternatives. For noncancer risk, predicted air concentrations from emissions associated with the point of dredge were below the health-based benchmarks; similarly, emissions associated with the SCA resulted in predicted concentrations below the benchmark for Alternatives B, C, D, D2, and F1. However, emissions associated with the SCA resulted in predicted concentrations above the benchmark for the other alternatives (Alternatives E, F2, F3, F4, G, H, I, and J). For Alternative G, which had the highest exceedance of the noncancer benchmark (by a factor of 5.4), the area of exceedance extends a maximum of approximately 1,700 meters from the boundary of the SCA. Additional engineering controls would be implemented to address any potential exceedances

For short term air exposures, based on average sediment concentrations, no exceedances of the NYS short term guideline concentrations (SGCs) or odor thresholds were predicted for off-site receptors from air emissions at both the point of dredge and the SCA, with the exception of the odor threshold for the SCA which was exceeded for Alternatives D2, F1, F2, F3, F4, G, H, and J by factors ranging from 1.1 to 2.2. Also, based on average sediment concentrations, worker exposures to air emissions at both the point of dredge and the SCA were predicted to be below the OSHA permissible exposure limit (PEL). For the on-site consolidation vs. off-site disposal evaluation of transportation accidents, the predicted incidence of fatalities and non-fatal injuries was higher for the off-site disposal option. The relative difference increases with increasing volume of dredged material, ranging from a factor of 1.6 for Option 1 (100,000 cubic yards [CY]) to a factor of 12 for Option 5 (20,000,000 CY). The comparison of air emission risks associated with the SCA (on-site) and the use of the mixing pad (for off-site disposal) indicated that the risks at the point of maximum exposure resulting from the mixing pad were estimated to be greater than those associated with the use of the SCA.

Residual Risks

The residual risk evaluation focused on the risk remaining after implementation of the remedial alternatives. The key risk concerns identified in the remedial investigation and risk assessments and evaluated here in terms of post-remediation are:

- Fish consumption (humans and wildlife);
- Benthic macroinvertebrate/insect consumption (wildlife);
- Direct exposure to sediment (benthic macroinvertebrates);
- Direct exposure to sediment (humans); and
- Other risks (fish, sediment cap failure).

The evaluation relied primarily on estimation of the following parameters under post-remediation conditions:

- Residual concentrations of key risk drivers (mercury and polychlorinated biphenyls [PCBs]) in sediment and fish tissue;
- Residual concentrations of mercury in water;
- Hazard quotients for key risk driver (polycyclic aromatic hydrocarbons [PAHs]) for benthic macroinvertebrate/insect consumption by wildlife;
- Area of sediment in the lake that exceed the critical mean probable effects concentration quotient (PECQ), which is the measure of sediment toxicity to benthic macroinvertebrates; and
- Cancer risk estimates for human exposure to sediment in the south basin.

A comparative evaluation of residual risks was conducted for the lake-wide alternatives. In general, Alternatives B through I would result in similar levels of risk reduction or residual risk because each alternative addresses approximately the same area of sediment (i.e., areas where the mean PECQ and/or the mercury probable effect concentration (PEC) are exceeded), assumes upland and in-lake source control, and includes aeration (oxygenation) of the water column. Alternatives F through I would provide an additional safety factor over Alternatives B through E with respect to protection of benthic macroinvertebrates from sediment toxicity.

Alternatives B through J are protective of humans and wildlife that consume fish (with one caveat), wildlife that consume insects, fish exposed to contaminants, and humans exposed to sediment in the south basin. The caveat pertaining to fish consumption is that mercury is a regional, national, and global pollutant. While Alternatives B through J address known and controllable sources of mercury to humans and wildlife, ongoing “background” sources may result in mercury concentrations in fish that exceed protective target concentrations. To some extent, the same caveat applies to polychlorinated dibenzo-*p*-dioxins/polychlorinated dibenzofurans (PCDD/PCDFs).

SECTION I.1

INTRODUCTION

This appendix summarizes the human health and ecological risk considerations relevant to the detailed analysis of lake-wide alternatives for Onondaga Lake, as summarized in Table I.1. The importance of considering remedy implementation risks as part of short-term effectiveness and residual risks as part of long-term effectiveness is emphasized in the United States Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC) regulations and guidance; in particular, the National Contingency Plan (NCP) requires an assessment of the potential short-term risks created by implementing the remedy, as well as the long-term risk reduction associated with a remedy (USEPA, 1990). Similarly, short-term impacts and effectiveness as well as long-term effectiveness and performance are part of the evaluation criteria for detailed analyses of alternatives specified in NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4030 (NYSDEC, 1990).

According to the NCP, the general preference to reduce mobility, toxicity, or volume through treatment must be weighed along with various other factors, including remedy implementation risk (short-term effectiveness), overall risk reduction (long-term effectiveness), and cost. This balancing is exemplified in *Contaminated Sediment Management Strategy*, which states that:

> In certain circumstances, the best strategy will be to implement pollution prevention measures as well as point and nonpoint source controls to allow natural recovery processes such as biodegradation, chemical degradation, and the deposition of clean sediments to diminish risks associated with the sites. In other cases, active remediation may be necessary. USEPA will not proceed with an active cleanup, however, when implementation of the remedial alternative would cause more environmental harm than leaving the contaminants in place (USEPA, 1998a).

This strategy is consistent with *Guidelines for Ecological Risk Assessment*, which states that risk reductions associated with a remedy must be balanced against potential impacts of the remedy itself (USEPA, 1998b).

The need to evaluate potential human health and ecological risk in the remedy selection process is also explicit in the remedial action objectives (RAOs) developed in the FS for the lake. As discussed in Section 2 of the feasibility study (FS), two of the five RAOs are risk-related as follows:

- To eliminate or reduce, to the extent practicable, existing and potential future adverse ecological effects on fish and wildlife resources, and potential risks to humans.
- To achieve surface water quality standards, to the extent practicable, associated with the chemical parameters of interest (CPOIs).

To address these RAOs and the risk-related elements of each NCP criterion, this appendix evaluates the potential lake-wide alternatives through consideration of the following:

- Potential remedy implementation risk relevant to an evaluation of (1) overall protection of human health and the environment and (2) short-term effectiveness.
- Potential residual risk relevant to an evaluation of (1) overall protection of human health and the environment and (2) long-term effectiveness and permanence.

The specific remedy implementation and residual risk elements evaluated and their implications with respect to remedy selection are described in Subsections I.2 and I.3, respectively. Note that in some instances, risk surrogates, such as contaminant concentrations or qualitative measures of impact on habitat, have been used because of the difficulties of quantifying direct measures of risk. This is consistent with relevant guidance documents such as the National Research Council (NRC) guide, *A Risk Management Strategy for PCB-Contaminated Sediments* (2001).

SECTION I.2

IMPLEMENTATION RISKS

I.2.1 BACKGROUND

I.2.1.1 Consideration of Implementation Risks in the Remedy Selection Process

According to NYSDEC guidance, the following factors should be addressed under the short-term effectiveness criterion (NYSDEC, 1990):

- Protection of the community during remedial actions: This aspect of short-term effectiveness addresses any risk that results from implementation of the proposed remedial action, such as dust from excavation or air-quality impacts from the operation of an incinerator.
- Environmental impacts: This factor addresses the potential adverse environmental impacts that may result from the implementation of an alternative and evaluates how effectively available mitigation measures would prevent or reduce the impacts.
- Time until remedial response objectives are achieved: This factor includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats.
- Protection of workers during remedial actions: This factor assesses threats that may be posed to workers and the effectiveness and reliability of protective measures that could be taken.

These factors were used to select the risk elements included in the evaluation of implementation risks for Onondaga Lake.

Guidelines for evaluating remedy implementation risks are presented in Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part C, Risk Evaluation of Remedial Alternatives) (USEPA, 1991). According to USEPA, the risks posed to workers and the community during remedy implementation can be evaluated either qualitatively or quantitatively, depending on conditions at the site (USEPA, 1991). Specifically, when short-term risks are not expected to be a problem for a site, a more qualitative evaluation generally is appropriate. In these cases, a qualitative evaluation of the magnitude, duration, and/or likelihood of the exposures and risks should be conducted, and assessors could describe short-term risks in a qualitative manner relative to the results of the baseline risk assessment. A *quantitative* evaluation of short-term risks is most likely to be useful when the types, levels, and/or availability of hazardous substances are expected to change significantly as a result of remediation (emphasis added) (USEPA, 1991).

In addition to the regulatory guidance described above, the quantification of risk elements for the alternatives considered for this project is guided by two site-specific factors:

1) potential risk associated with this project are of considerable community interest, and

2) quantification of risks helps differentiate between alternatives that are alike except for varying magnitudes of similar remedial actions.

The risks associated with the Onondaga Lake remediation are of considerable community interest because the site is large and located within a commercially developed area with a residential population. A significant (estimated at 50 personnel) hire of local (within 100 miles) personnel for project staffing is expected. Worker and transportation accidents associated with the project could impact the local community. The site is located adjacent to the New York State Fairgrounds and the potential impact of traffic and air emissions on that area are important to the local community. Alternative transport methods (e.g., barge and/or rail) may be used and will be evaluated during design. The lake is currently used for recreational activities and, although the remediation is expected to ultimately increase the lake's recreational value, the short-term impact of water quality changes and temporary habitat losses on recreational value due to implementation of specific alternatives is important. It is recognized that there are uncertainties in the quantification of potential risks associated with activities in the remedy; however, these uncertainties are consistent with the level of uncertainty inherent in an FS, as opposed to the remedial design stage. As an example, the quantification of truck traffic and the potential for accidents during transportation is based on estimates of material quantities that also provide, in part, the basis for estimating remediation costs in the FS. The community is likely to be concerned about the potential risks associated with project implementation. Despite the uncertainties, quantification of those risks, even using specifics that are estimated using the best information at this time, is a valuable tool to help the community to understand the impact of the various alternatives.

The LWAs considered consist of varying quantities of dredging, on-site sediment management, in-lake sediment capping, and habitat enhancement. To differentiate between alternatives it is necessary to quantify short-term implementation and long-term residual risks. Other remedial projects may consider alternatives that involve combinations of more widely-varying remedial actions and therefore a qualitative evaluation of short-term and long-term risks is more suitable. However, it is difficult to develop a meaningful qualitative comparison between Alternatives C and F1 other than to say that Alternative F1 involves more worker hours, more trucking miles, more water and air emissions, more temporary loss of lake habitat (the resultant habitat will be of greater value to both human health and the environment), and more quality of life impacts. Other issues, such as permanence and risk of failure, also differentiate between the alternatives. Performing a quantitative analysis, even if based on preliminary specifics for each risk category, allows the relative difference between the two alternatives to be evaluated. The inputs to the calculations for risk, such as the number of worker hours for the estimation of worker accidents, facilitate meaningful comparison among alternatives, even if the actual worker hours may be subject to some changes during remedy design and implementation. It is considered necessary to quantify risks to perform a comparison of alternatives based on short-term effectiveness and the potential for inaccuracies in quantifying these short-term risks is not considered to diminish the value of the comparison. Such quantification of risk elements for the alternatives is supported by the regulatory guidance, by the RAOs for the project, and by the site-specific factors, including the large-scale impacts of community interest, and need to provide for a differentiation among alternatives.

Failure to adequately evaluate implementation risk during the remedy selection process can result in unanticipated risks to workers and nearby residents during cleanup, and in costly delays associated with substantial remedy modifications or abandonment of an incomplete remedy. Thus, short-term implementation risks, such as those posed by extensive dredging activities and transportation of waste, capping and backfill material, must be carefully evaluated and weighed against any long-term risk reduction that may be achieved.

Intrusive remedies expose workers to an increased risk of physical injury and, in some cases, heat stress and heat stroke, or fires and explosions. Similarly, transportation of excavated materials and capping/backfill materials may generate high traffic volumes that can result in spills or traffic accidents. It is recognized that excavation and treatment remedies have been successfully implemented at many sites, although the costs and implementation times for such remedies are often higher than originally anticipated. However, as demonstrated at several notable Superfund sites, such remedies may offer little, if any, additional long-term risk reduction in comparison to containment-based remedies.

Accordingly, the scope and potential risks of such remedies should be assessed in detail prior to remedial decision making. For example, previous evaluations at various Superfund sites demonstrate that the short-term remedy implementation risks posed by excavation can at times be significant and can outweigh any long-term risk reduction afforded by such intrusive remedies (see Table I.2 for examples). At each of these sites, in situ remedies based on containment, with limited or no removal, were ultimately selected. These sites range in size and complexity and include both upland sites and sediment sites. Table I.2 is provided to illustrate the use of implementation risk in the CERCLA process.

I.2.1.2 Remedy Implementation Risks Evaluated

The following specific remedy implementation risk elements were evaluated for the lake-wide alternatives:

- On-site worker accidents that may occur during construction and remediation operations;
- Accidents and spills that may occur during transport of large quantities of site-related materials, such as dredged material, clean backfill material, and capping material;
- Impact on lake water quality of resuspension of in-lake sediments during dredging;

- Impact of resuspension of in-lake sediments during dredging on the natural recovery of the profundal sediments;
- Air quality impacts during dredging and materials handling in the sediment consolidation area (SCA);
- Impact of discharge of effluent from sediment dewatering operations back into the lake;
- Temporary loss of lake habitat due to the physical removal of benthic macroinvertebrate communities and/or their habitat during dredging, or burial of organisms under clean cap/backfill materials; and
- Quality of life impacts, including potential restricted use of areas in the vicinity of the lake and increased local truck traffic transporting site-related materials during remedy implementation.

The results of the implementation risk analysis were used in Section 5 of the FS to compare the short term effectiveness of the alternatives evaluated. In addition, the evaluation of transportation accidents and air emission risks was applied to the analysis of on-site consolidation vs. off-site disposal options presented in Section 4 of the FS.

These remedy implementation risk elements and their associated measures of risk are summarized in Table I.3. Note that in some instances, risk surrogates such as contaminant concentrations have been used because of the difficulties of quantifying direct measures of risk. This is consistent with relevant guidance documents such as the National Research Council's *A Risk Management Strategy for PCB-Contaminated Sediments* (2001). In some cases, the risk elements associated with certain alternatives were considered absent or *de minimis* and were not quantitatively evaluated. Such instances are noted as appropriate in the evaluation of the particular risk elements that follow.

I.2.2 ON-SITE WORKER ACCIDENTS

The evaluation of on-site worker accidents is included in the implementation risk evaluation for several reasons. The scale of the proposed remediation project in terms of the large amount of materials handled under any alternative represents a large number of worker hours, which underlines the potential significance of accidents, should they occur. Furthermore, the accident rates for workers involved in on-site remedy implementation, e.g. laborers, equipment operators, deckhands, and truck drivers, are among the highest in terms of potential workplace fatalities as measured by an index of relative risk (Ruser, 1995). Physical hazards during site remediation (e.g., accidents involving falls or equipment) are often similar in nature to those encountered during other types of construction or industrial activities. To quantify the risks of physical hazards during remediation activities for Onondaga Lake, the number of fatalities and non-fatal injuries expected to occur during the remedy implementation period was evaluated. The methods and results of this evaluation are described in the following subsections.

I.2.2.1 Methods

The evaluation was conducted based on the methods developed by Hoskin *et al*. (1994), using published fatal and non-fatal accident rate statistics and site-specific information regarding the type and duration of activities to take place during remediation. This evaluation relies on estimates of worker-years for specific remediation activities (e.g., materials handling, excavation, backfilling) developed in support of the estimation of costs for the remedial alternatives (see Appendix F, cost estimates). These worker-year estimates take into account decreased worker productivity due to the potential use of personal protective equipment (PPE). The accident rate data used in this assessment are based on data available for the construction and water transportation industries, and are not specific to site remediation, because there is no separate reporting of accident statistics for the remediation industry. These accident rate data are based on actuarial statistics that have a relatively low level of uncertainty with respect to their occurrence, and to a large extent cannot be mitigated for a given project design.

The following 12 categories of labor directly involved in field remedial activities were considered in this analysis: leverman, mate, captain, deckhand, mechanic, operator, superintendent, surveyor, engineer, project manager, operations manager, and laborer. Support services were not accounted for, thus underestimating to some limited extent the potential risks associated with each remedy.

The overall fatality (and non-fatal injury) incidence rate for a remedial alternative is equal to the weighted average of the individual occupational fatality (and non-fatal injury) rates, using the percentage distribution of the worker-hour inputs as the weighting factor (Hoskin *et al*. 1994).

$$m = E \times FR$$

where

μ = Expected number of fatalities

E = Worker-years of exposure, i.e. total estimated time (person-years) for implementing a specific remedy

FR = Occupational fatality (and non-fatal injury) rate

Based on this method, using project-specific manpower requirements and accident rates taken from the Bureau of Labor Statistics (BLS), United States Department of Labor ([USDOL], 1999a, 2000a, 2001a, 2002), weighted fatality rates can be calculated for each labor category involved and summed to predict an overall weighted fatality rate for each remedial alternative.

Non-fatal injury/illness rates were not available from BLS for the various labor categories; therefore, accident rates available for the construction and water transportation industries were used for the corresponding labor categories. In other words, construction industry accident rates were used for worker categories of mechanic, operator, superintendent, surveyor, engineer, project manager, operations manager, and laborer, and water transportation industry accident rates were used for worker categories of leverman, mate, captain, and deckhand. Accident rates for years 1999-2001 were averaged to obtain the overall rate of non-fatal injuries/illnesses (USDOL, 1999b, 2000b, 2001b).

There are no standards against which predicted accident rates may be compared; rather, worker safety is a matter for best management practices. As with other risk estimates developed in Appendix I, on-site worker accident rates should be considered as incremental risks that provide a basis for comparative evaluation of the retained lake-wide alternatives.

I.2.2.2 Application of Methods to Onondaga Lake

Estimates of on-site worker accident risks were derived using the methods presented in Subsection I.2.2.1. This analysis was performed for the 13 active lake-wide remedial alternatives (Alternatives B, C, D, D2, E, F1, F2, F3, F4, G, H, I, and J) being considered in the FS. These estimates were developed using the labor hour and in-place dredge volume estimates provided in Appendix F, cost estimates.

Major tasks for which worker-hour estimates were obtained include:

- Mobilization/Demobilization
- Site preparation and facility construction
- Dredging of SMU1 through SMU7
- Sediment capping
- Backfilling
- Habitat and vegetation restoration
- Construction of SCA
- Water treatment

Sub-tasks included under each of these major tasks are presented in Appendix F, cost estimates. Worker-hour estimates were based on a working duration of 16 hours/day (two 8-hour shifts, as described in Appendices F and L), 5 days/week, and 30 weeks/year.

I.2.2.3 Results

The predicted incidence (i.e., the mean number) of on-site worker fatalities and non-fatal injuries are summarized in Tables I.4 and I.5, respectively. These findings are also presented on Figures I.1 and I.2 for fatal and non-fatal accidents, respectively. Supporting tables A-1 and A-2 providing detailed calculations of fatal and non-fatal accident risks are presented in Attachment A.

Based on the evaluation of accident data for various labor categories, the predicted incidence of fatalities ranges from 0.06 to 0.09 for Alternatives B, C, D, D2, and F1; 0.11 to 0.15 for

Alternatives F2, F3, F4, G, and H; and 0.43 to 0.80 for Alternatives E, I, and J. Reflecting the increases in material quantities being handled, the predicted incidence of worker accidents increases slightly and gradually from Alternatives B, C, D, D2, and F1 to Alternatives F2, F3, F4, G, and H, with a steep increase for Alternatives E, I, and J. The predicted incidence of fatalities for Alternative J, the alternative with the highest dredged volume, is approximately 14 times higher than for Alternative B. A similar pattern is observed for non-fatal accidents.

On-site worker accident risks may also be estimated as the probability or risk of at least one fatality (or one non-fatal injury) occurring over the life of the project. As presented in Table A-1 of Attachment A, the probability of at least one fatality occurring over the life of the project ranges from 6% to 9% for Alternatives B, C, D, D2, and F1; 11% to 14% for Alternatives F2, F3, F4, G, and H; and 35% to 55% for Alternatives E, I, and J. The probability of at least one non-fatal injury occurring over the life of the project is 100% for all 13 lake-wide alternatives (see Table A-2 of Attachment A).

I.2.3 TRANSPORTATION ACCIDENTS

Inherent in the transport of materials to and from the site is the risk of an accident during transit, which may involve a fatality, injury, and/or spill. The risks of an accident occurring during transport of waste or equipment may be significant, especially if large quantities of waste must be transported off-site for disposal, and/or correspondingly large quantities of construction materials imported to the site. The scale of the proposed remediation project in terms of the large amount of materials handled under any alternative represents a large number of vehicle-miles traveled to transport these materials, which underlines the potential significance of transportation related accidents, should they occur. To quantify the risks of transportation accidents during the remediation activities for Onondaga Lake, the number of fatal and non-fatal accidents was evaluated. This evaluation focused on impacts along the entire transportation corridor and not just local impacts, which are evaluated separately in Section I.2.9, Other Quality of Life Impacts. The methods and results of this evaluation are described in the following subsections.

I.2.3.1 Methods

The potential number of fatalities and non-fatal accidents involving vehicles transporting site-related materials (e.g., dredging material, clean fill material, or SCA construction materials) on a particular route (F_s) was calculated by multiplying the vehicle-miles traveled by the vehicle transporting site-related materials on a particular route (referred to hereinafter as “the designated route”) by the overall fatal accident frequency on the designated route.

$$F_s = VMT_s \ x \ AF_t$$

where

F_s = Number of fatalities involving vehicles carrying site-related materials (fatalities/remedy alternative),

VMT_s = Round-trip vehicle-miles traveled on the designated route by vehicles carrying site-related materials (vehicle-miles/remedy period), and

AF_t= Overall fatal accident frequency on the designated route (fatal accidents/vehicle-miles).

VMT_s is equal to the round-trip length of the designated route (D) multiplied by the number of vehicle trips on the designated route (N_s):

$$VMT_s = D \; x \; N_s$$

where

D = Length of the designated route (vehicle miles/trip) and

N_s = Number of vehicle trips on the designated route (vehicle trips/remedy period).

The preferred mode of transportation for site-related materials is truck (see Section 4.6.2 of FS).

Several traffic accident databases were researched to identify the most appropriate fatal accident frequency statistics available for use in the transportation accident evaluation. The New York State Department of Transportation (NYSDOT) was contacted to obtain traffic accident data specific to Onondaga County and in the vicinity of Onondaga Lake. The NYSDOT indicated that accident rate data for such a limited geographical area would not have much statistical validity and recommended the use of national traffic accident databases. Traffic accident data available on a state-by-state basis from the United States Department of Transportation (USDOT) for all vehicle classes were also reviewed. This review indicated that there is very little variability between state traffic accident data and national traffic accident data (a factor of less than two). Therefore, national traffic accident data available from USDOT's Federal Motor Carrier Safety Administration (FMCSA) specific to large trucks, which are the preferred mode of transportation of site-related materials, were determined to be appropriate for the estimation of transportation related fatalities and non-fatal injuries. These accident rate data are based on actuarial statistics that have a relatively low level of uncertainty with respect to their occurrence, and to a large extent cannot be mitigated for a given transportation mode.

A fatality rate of 2.8 x 10^{-8} fatalities per truck-mile was used in this analysis, based on average fatality rates for large trucks between 1992 and 2001 obtained from the FMCSA for these years (United States Department of Transportation [USDOT], 2003a). A non-fatal injury rate of 7.2×10^{-7} was used based on average non-fatal injury rates for large trucks between 1992 and 2001 (USDOT, 2003a).

There are no standards against which predicted accident rates may be compared; rather, transportation safety is a matter for best management practices. As with other risk estimates developed in Appendix I, transportation accident rates should be considered as incremental risks that provide a basis for comparative evaluation of the retained lake-wide alternatives.

I.2.3.2 Application of Methods to Onondaga Lake

The primary objectives of the transportation accident evaluation were as follows:

- To evaluate transportation accident risks associated with on-site consolidation and off-site disposal options; and
- To evaluate transportation accident risks for the 13 active lake-wide remedial alternatives considered in the FS.

In addition to evaluating transportation accidents as a cause of human injury, consideration was also given to the potential for spills and the presence of sensitive receptors on the transportation routes to off-site disposal facilities. In particular, each transportation corridor between the site and candidate disposal facilities was reviewed for the presence of wildlife refuges, sensitive watersheds, and other sensitive receptors.

I.2.3.2.1 Transportation Accident Risks: On-Site Consolidation vs. Off-Site Management

Transportation accident risks associated with on-site consolidation and off-site sediment management options for dredged material at the site were estimated using the method presented above in Subsection I.2.3.1. The transportation accident analysis was undertaken at a generic lake-wide level using four scenarios as follows to bound the range of volumes considered for lake-wide alternatives:

Option 1: Removal of 100,000 CY (in-place volume) of sediments;

Option 2: Removal of 500,000 CY (in-place volume) of sediments;

Option 3: Removal of 1,000,000 CY (in-place volume) of sediments;

Option 4: Removal of 10,000,000 CY (in-place volume) of sediments; and

Option 5: Removal of 20,000,000 CY (in-place volume) of sediments.

It is recognized that the transportation accident evaluation, as outlined here, will not result in a measure of transportation-related risks for specific lake-wide alternatives; rather, it is intended to assess, for the range of dredging options being considered in the FS, the relative risks associated with on-site consolidation and off-site disposal options. Transportation accident risks (both fatal and non-fatal) associated with the various disposal options were developed using the following simplifying assumptions:

- For the on-site consolidation option, the entire dredged volume can be accommodated in the wastebeds.
- Dredging is assumed to be conducted hydraulically, and the hydraulically dredged material is conveyed directly by pipeline to the SCA. Therefore, vehicle miles traveled for transporting dredged material is zero for the on-site consolidation option.
- Vehicle miles traveled for transportation of SCA construction materials were included for the on-site disposal option.
- Vehicle miles traveled for transportation of dredged material, process area construction material, and lime for solidification of dredged material were included for the off-site disposal option.
- Transportation accidents associated with capping and backfill operations, which would be performed regardless of whether dredged material is consolidated on-site or disposed off-site, were not included in this evaluation.
- All dredged materials were considered to be non-hazardous (see Section 4.12 of FS).
- Locations of potential off-site disposal facilities were based on those identified in Section 4.12.2 of the FS. These facilities included (a) High Acres, Fairport, New York; (b) Pine Avenue Landfill, Niagara Falls, New York; (c) American Landfill, Waynesburg, Ohio; and (d) Atlantic Waste Disposal, Waverly, Virginia.
- For options with a dredged volume less than or equal to 1,000,000 CY requiring off-site disposal, 50 percent of the dredged material was assumed to be disposed of at High Acres and 50 percent at Niagara Falls/Pine Avenue Landfill, as specified in Appendix K, sediment management and water treatment cost estimates.
- For the 10,000,000 CY and 20,000,000 CY dredged volume scenarios, due to capacity limitations at off-site disposal facilities, 50 percent of the dredged material was assumed to be disposed of at American Landfill (Waynesburg, OH) and 50 percent at Atlantic Waste Disposal (Waverly, VA) as specified in Appendix K, sediment management and water treatment cost estimates.
- Suppliers of SCA construction material, process area construction material, and lime required for the solidification of dredged material prior to off-site disposal were all assumed to be located within a 25-mile radius of the site.
- A truck capacity of 20 tons/truck and a density of dredged material, as well as imported construction material, of 1.4 tons/CY were assumed.
- The volume of lime added for solidification was 10 percent of dredged volume (see Appendix K, sediment management and water treatment cost estimates).
- The volume of material for construction of the SCA for the on-site disposal option and construction of the process area for handling dredged material prior to off-site disposal were obtained from Appendix K, sediment management and water treatment cost estimates.

- The off-site disposal volume equals 1.15 times the dredged volume due to solidification processes (addition of lime and swelling) (see Appendix K, sediment management and water treatment cost estimates).
- Train transport was eliminated from consideration due to prohibitive costs associated with this mode of transport for off-site disposal of dredged material (see Section 4.12.2 of the FS).

I.2.3.2.2 Transportation Accident Risks: Comparison of Lake-Wide Alternatives

Transportation accident risks were estimated using the methods presented in Subsection I.2.3.1. The assumptions used were the same as those listed in Subsection I.2.3.2.1, with the following additions:

- The volumes of dredged material, as well as capping and backfill materials listed in Table I.1 and Appendix E, areas and volumes, for the lake-wide alternatives were used in this evaluation, in place of the generic dredge volumes of 100,000 CY through 20,000,000 CY.
- It was assumed that all dredged material would be consolidated on-site in the wastebeds.
- Transportation accidents associated with import of capping and backfill materials were included in this evaluation.
- Suppliers of capping and backfill materials were assumed to be located within a 25-mile radius of the site.
- Barge transport was eliminated from consideration for this evaluation as a possible mode of transportation of capping or backfill material to the site, since no supplier quarries were identified adjacent to the barge canal system (Parsons, 2004).

I.2.3.3 Results

I.2.3.3.1 Transportation Accident Risks: On-Site Consolidation Vs. Off-Site Disposal

The predicted incidence of transportation-related fatalities and non-fatal injuries for the on-site consolidation vs. off-site disposal evaluation are summarized in Tables I.6 and I.7, respectively. These results are also presented on Figures I.3 and I.4 for fatal and non-fatal accidents, respectively. Supporting Tables B-1 and B-2, providing detailed calculations of transportation-related accidents for the on-site consolidation vs. off-site disposal option evaluation, are presented in Attachment B. The routing and travel distances for trucks transporting dredged material to off-site disposal facilities are described in Section C-1 of Attachment C.

For all five dredged volume scenarios (100,000 CY through 20,000,000 CY), the predicted incidence of fatalities is higher for the off-site disposal option than for the on-site consolidation option. These differences range from a factor of 1.6 times higher for Option 1, 2.3 times higher for Option 2, 2.4 times higher for Option 3, 11 times higher for Option 4 and to 12 times higher for Option 5. A similar pattern is observed for non-fatal injuries. The differences in predicted accident rates reflect the differences in the volumes of dredged material, the volume of construction materials imported for the SCA (on-site consolidation option), and the process area (off-site disposal option). The highest volume option (Option 5, off-site disposal option), results in a predicted incidence of 41 fatalities over the duration of the project.

I.2.3.3.2 Review of Off-Site Transportation Corridors for Sensitive Receptors

A summary of sensitive receptors present en-route to the various candidate off-site disposal facilities is included in Section C-2 of Attachment C.

- Three sensitive receptors were identified enroute to the High Acres facility in Fairport, New York: McGraw Swamp, Montezuma National Wildlife Reserve, and Hozzey Swamp.
- Five sensitive receptors were identified enroute to the Pine Avenue Landfill in Niagara Falls, New York: McGraw Swamp, Montezuma National Wildlife Reserve, Hozzey Swamp, Mendon Ponds Park, and Tillman Road State Wildlife Management.
- Seven sensitive receptors were identified enroute to American Landfill in Waynesburg, Ohio: McGraw Swamp, Montezuma National Wildlife Reserve, Hozzey Swamp, Mendon Ponds Park, Salem Reservoir, Guilford Lake, and Lake Mohawk.
- Eight sensitive receptors were identified enroute to Atlantic Waste Disposal in Waverly, Virginia: Tully Lake and wetlands, Whitney Point Park, Hickory Run State Park, Pennsylvania State Game Lands No. 141, Savage Park, Fairland Regional Park, Potomac River, and James River.

Off-site transportation to disposal facilities involves the potential for spills of dredged material in association with transportation accidents, with potential adverse impacts to the sensitive receptors listed above. The actual potential for adverse effects to sensitive ecological receptors from off-site disposal, if a sediment spill occurred, is difficult to estimate due to unknowns in the exposure pathways.

I.2.3.3.3 Transportation Accident Risks: Comparison of Lake-Wide Alternatives

The predicted incidence of transportation-related fatalities and non-fatal injuries for the comparison of lake-wide alternatives evaluation are summarized in Tables I.8 and I.9, respectively. These results are also presented on Figures I.5 and I.6 for fatal and non-fatal accidents, respectively. Supporting Table B-3, which provides detailed calculations of transportation related accidents for the comparison of alternatives evaluation, is presented in Attachment B.

Based on an evaluation of national traffic accident data, the predicted incidence of fatalities ranges from 0.3 to 0.5 for Alternatives B, C, D, D2, and F1; 0.7 to 1.1 for Alternatives F2, F3, F4, G, and H; and 2.7 to 5.1 for Alternatives E, I, and J. Reflecting the increasing quantities of materials being transported, the predicted incidence of transportation related accidents increases slightly and gradually from Alternatives B, C, D, D2, and F1 to Alternatives F2, F3, F4, G, and H, with a steep increase for Alternatives E, I, and J. The predicted incidence of fatalities for Alternative J, the alternative with the highest dredged volume, is approximately 19 times higher than Alternative B. A similar pattern is observed for non-fatal accidents.

Transportation accident risks may also be estimated as the probability or risk of at least one fatality (or non-fatal injury) occurring over the life of the project. As presented in Table B-3 of Attachment B, the probability of at least one fatality occurring over the life of the project ranges from 24% to 41% for Alternatives B, C, D, D2, and F1; 50% to 67% for Alternatives F2, F3, F4, G, and H; and 93% to 99% for Alternatives E, I, and J. The probability of at least one non-fatal injury occurring over the life of the project is 100% for all 13 lake-wide alternatives (see Table B-3 of Attachment B).

I.2.4 IMPACT OF RESUSPENSION ON LAKE WATER QUALITY

Dredging will result in temporary resuspension of sediments, which will increase the total concentrations of sediment-related CPOIs in the water column, possibly to above water quality standards or criteria for Onondaga Lake. Furthermore, releases of pore fluids and desorption of CPOIs from the resuspended sediments will result in increases in the dissolved concentrations of some CPOIs in the water column. Measures to mitigate these impacts will be considered during the remedial design phase. Water quality monitoring of the effluent will be conducted to ensure that end-of-pipe discharge limits (to be established by NYSDEC) are being met. The potential significance of the concentration increases that may be caused by resuspension was investigated for each of the lake-wide remedial alternatives that involve dredging. The methods and results of this investigation are described in the following subsections.

The relative contribution of capping to resuspension of sediments was also considered in evaluating the implementation risks associated with each lake-wide alternative. As noted in Appendix H, capping issues, experience from other projects indicates that the levels of sediment resuspension associated with well-managed capping operations are acceptable, and rates of sediment release are likely to be low compared to those for environmental dredging. To quantify the relative impact of capping, the total mass of sediments resuspended by cap placement was conservatively assumed to be 0.5 percent of the mass of sediments in the upper 6 inches (15 cm) over the area to be capped , as indicated in Section H.3.4.3 (Contaminant Releases during Construction) of Appendix H, capping issues). This can be compared to the mass of sediment assumed to be resuspended during the dredging process of approximately one percent of the volume of dredged materials across the full dredge cut, as indicated in Appendix L, dredging issues.

The potential significance of resuspension due to capping was investigated by considering the volumes of sediments involved. For each lake-wide alternative, the volume of sediment resuspended by capping was estimated; this volume was then compared to the total volume of sediment resuspended by dredging and capping combined. To account for the mixing of clean cap materials with contaminated sediments, the mass of contaminated sediment resuspended by capping was reduced by a factor of two (i.e., half of the material resuspended by capping is clean cap material and the other half is contaminated sediment). Resuspension due to backfilling of dredged areas (which will occur in alternatives E, I, and J) may be significant, but the water quality effects of resuspension during backfilling have not been included in the quantitative analysis of the significance of resuspension due to capping since the residual materials subject to disturbance by backfilling are expected to have substantially lower concentrations than those being capped. However, it should be noted that resuspension from "clean" backfill material (turbidity) may have a temporary impact on aquatic organisms.

The significance of resuspension due to capping operations was evaluated by comparisons among the lake-wide alternatives as well as by comparisons to the resuspension due to dredging operations. As shown in Table I.10, the estimated volumes of sediments resuspended by capping in Alternatives B, C, D, and D2 are all between 700 and 800 CY. The volume of sediments resuspended by capping is about 50 percent higher (almost 1,200 CY) in Alternatives F1, F2, F3, F4, G, and H. The volumes of sediments resuspended by capping in Alternatives E and I are much lower than for the other alternatives, but this difference may be offset by resuspension during backfilling operations. Alternative J has a much higher volume of sediments resuspended by capping (almost 4,700 CY) than the other alternatives because it involves capping of a much larger area.

The volume of sediment resuspended by capping was compared in two ways to the total volume of sediment resuspended by dredging and capping combined. The first way compares the volumes on a lake-wide basis, regardless of whether the capping and dredging occur in the same SMUs. Because many of the alternatives have certain areas subject to capping only, the comparison of resuspended volumes was also performed only for those areas that are subject to both capping and dredging. This second approach was considered to be a more representative measure of the relative resuspension impacts of capping and dredging. As shown in Table I.10, the contributions of capping to total resuspension range from less than one percent to approximately 24 percent using the first approach, and from less than one percent to about 10 percent using the second (more representative) approach. Because the amount of resuspension due to capping is reasonably consistent across most of the lake-wide alternatives and is only a minor contributor (estimated to be less than 10 percent with the more representative approach) to the total amount of resuspension, the impact of resuspension associated with capping was not included in the quantitative evaluation of impacts on lake water quality.

I.2.4.1 Methods

The expected effects of dredging on CPOI concentrations in the water column have been estimated by the models presented in Appendix L, dredging issues. These models estimate the incremental concentrations (total and dissolved) in the water column that would result from resuspension of sediment in the vicinity of a working dredge in Onondaga Lake. Appendix L describes the development and application of continuously stirred tank reactor (CSTR) models for estimating the impacts of dredging in each of two zones around the dredge. The smaller CSTR zone is defined by a 100-ft-diameter circle centered on the dredge; the larger CSTR zone represents the entire dredged area within the SMU. The CSTR models provide concentration estimates that represent averages for the water column within a well mixed zone under steady-state conditions. Dissolved-phase concentrations are estimated by assuming equilibrium partitioning between the resuspended sediments and the water column. Releases of pore liquids are not represented explicitly in the modeling process, but the assumption of instantaneous equilibrium partitioning of CPOIs from the resuspended sediments to the water column is expected to approximate the effects of such releases. Background levels of CPOIs in the lake water are not considered in the concentration calculations, so the concentration estimates provided by the CSTR models represent the incremental water column concentrations (above background) that are attributable to dredging activities.

The potential presence of non-aqueous phase liquids (NAPL) in some of the sediments has not been accounted for in a quantitative manner in the models presented in Appendix L, dredging issues. Although NAPL has been found in the sediments at some locations, in particular SMUs 1 and 2, and to a lesser extent SMU 7, with the exception of SMU2, it is typically thought to be present in a weathered and distributed form (see Appendix B, sediment management units, for discussion of NAPL). While there are very limited NAPL characterization data, heavily-stained fill material was observed, and elevated concentrations of benzene and chlorobenzene were detected in porewater and sediment samples collected from SMU2. Dredging in these areas could result in short term releases of NAPL to the water column, and in general, alternatives that involve dredging greater volumes of sediment are more likely to encounter NAPL and/or to release greater amounts of NAPL. The potential impact of NAPL with respect to air emissions is addressed in Subsection I.2.7.3.4.

The incremental concentration estimates generated by the CSTR models were used to evaluate the expected duration and areal extent of exceedances of water quality standards associated with each lake-wide dredging alternative. The CSTR models are specific to the dredging alternatives considered for each individual SMU; the impacts of the lake-wide dredging alternatives were estimated by combining the incremental effects of the SMU-specific dredging activities.

The impacts of each lake-wide dredging alternative were characterized by a two-step process that considered both the duration of the impact and the volume of water impacted. The first step was to identify the SMU-specific dredging activities expected to result in exceedances of water quality criteria; the concentration estimates derived for each SMU-specific dredging operation were compared to water quality criteria to identify dredging operations that (if uncontrolled) would result in exceedances of the criteria. The second step was to calculate an index of the water quality impact for each lake-wide alternative based on the duration and areal extent of the expected exceedances. The SMU-specific dredging activities expected to result in exceedances of water quality criteria were identified using the incremental concentration estimates for the larger CSTR zone considered in Appendix L, dredging issues. This CSTR zone represents the entire area to be addressed by dredging within the SMU; the limitations of this approach are discussed in Appendix L, dredging issues. The concentrations within the smaller CSTR zone are higher, but the smaller CSTR represents a relatively small area (100-ft diameter, or about 0.2 acres) compared to the larger CSTR zones (which range in size from 10 to 156 acres) within which effects on water quality are expected.

The incremental concentration estimates for each SMU-specific dredging alternative were compared to the NYSDEC water quality standards and guidance values listed in *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (NYSDEC, 1998). This document is commonly identified as Technical and Operational Guidance Series (TOGS) 1.1.1. The standards and guidance values in TOGS 1.1.1 are used in this appendix as benchmarks to evaluate the impacts of the lake-wide remedial alternatives being considered for Onondaga Lake. This use does not establish or imply that these values are applicable or relevant and appropriate to the remediation of Onondaga Lake; rather, they are being used here to support the development of a water quality impact (WQI) index.

The value of the WQI index for each lake-wide dredging alternative was calculated as the sum of the values for the SMU-specific dredging operations included in the alternative. The WQI value for each SMU-specific dredging operation was obtained by multiplying the duration of dredging (in 80-hour weeks) by the volume of the larger CSTR zone around the dredge. Thus, the WQI index is a function of the volume and duration of the SMU-specific exceedances associated with each lake-wide alternative. The details and results of the evaluation of the impacts of each lake-wide dredging alternative on concentrations in the water column are discussed in the following sections.

I.2.4.2 Application of the Methods to Onondaga Lake

The SMU-specific dredging activities that are expected to result in exceedances of water quality criteria were identified by comparing the incremental concentration estimates to the standards and guidance values listed in TOGS 1.1.1 for Class B and Class C surface waters. The *Onondaga Lake Baseline Ecological Risk Assessment* (BERA; TAMS, 2002a) indicates that the State of New York has identified some parts of Onondaga Lake as Class B surface water and other parts of the lake as Class C surface water (see Figure 3-10 of BERA). TOGS 1.1.1 indicates that unless otherwise specified, the standards and guidance values apply to all forms of the chemicals for which they are listed; therefore, exceedances for most CPOIs were identified using the total water column concentrations estimated by the dredged-area CSTR model. TOGS 1.1.1 specifies that the standards for mercury apply to dissolved concentrations; therefore, the evaluations for mercury are based on the dissolved concentrations estimated by the dredged-area CSTR model.

This comparison indicates that each of the SMU-specific dredging alternatives is expected to result in exceedance of at least one standard or guidance value. The comparisons are summarized in Table I.11. These comparisons do not include background concentrations of the various CPOIs in the lake water; the incremental concentrations due to dredging alone are expected to result in exceedances even where the background concentrations are negligible.

The water quality impacts of the lake-wide dredging alternatives are characterized by the WQI index, which accounts for the impacts in each SMU where dredging is expected to result in an exceedance. The comparisons in Table I.11 indicate that in the absence of control measures, each of the SMU-specific dredging alternatives will result in exceedances of the standard for PCBs in the dredged area of the SMU; there will also be some exceedances for benzo(a)pyrene, hexachlorobenzenes, and mercury. Therefore, the WQI index for each lake-wide alternative includes all of the SMUs dredged in that alternative. The contribution to the WQI index for each SMU is the product of the duration of dredging in that SMU and the volume of water in the dredged-area CSTR. The volume is calculated in millions of cubic yards (CY) using the area to be dredged and the average water depth during the dredging activities. The duration of dredging is expressed in weeks, where each week includes 80 hours of dredging.

Although the lake-wide alternatives may be implemented using multiple dredges, this would not reduce the WQI index unless multiple dredges operated in the same well-mixed zone. Operation of multiple dredges simultaneously in the same SMU would tend to reduce the duration of exceedances of the surface water quality criteria in the SMU being dredged, but would also tend to increase the incremental concentrations in the water column. This would increase the magnitude and areal extent of the exceedances; but these factors are not accounted for in the WQI index (which uses the dredged area as an estimate of the areal extent of the exceedances in each SMU). Thus, the WQI index could be reduced substantially by using multiple dredges in each SMU. Because the WQI index does not realistically reflect the effects of multiple dredges, the possibility of multiple dredges was not accounted for in developing the WQI index values for the specific lake-wide alternatives.

The WQI index values were used to compare the duration and extent of the impacts of the various lake-wide dredging alternatives. The WQI index does not attempt to account for the nature or the degree of the exceedances. Although a more complex index that considers these factors could be developed, this is not considered necessary for this appendix because the nature of the water quality impacts is similar from one lake-wide alternative to another (i.e., most of the dredging activities are expected to result in exceedances for the same CPOIs).

The WQI index developed in this appendix is based on a number of simplifying assumptions. For the most part, these assumptions relate to the modeling described in Appendix L, dredging issues, which is based on a limited data set and a relatively simple conceptual model of conditions in the lake during dredging. Development of a more sophisticated model to represent the hydrodynamic and chemical processes that control the water quality at various times in different parts of the lake would require additional data and substantial resources. Therefore, with one exception,[1] no attempt has been made to characterize the nature and extent of the impacts of dredging outside the areas being dredged. No attempt has been made to account for the transient periods after dredging begins but before the steady state assumed in the CSTR models is established; similarly, the persistence of the impacts after dredging stops has not been estimated. The length of these transient periods is expected to vary substantially from one dredging alternative to another, primarily as a function of the volume of the CSTR. The effects of spatial and temporal variations in the background concentrations of CPOIs in the lake water (which, as described in Subsection I.2.6, may be affected by discharges of effluent generated by the dredging process) have not been considered. As noted previously, the potential presence of non-aqueous phase liquids is not assumed or addressed in the CSTR models.

I.2.4.3 Results

The WQI index calculations are summarized in Table I.12. These values indicate that the duration and extent of the water quality impacts associated with the various lake-wide dredging alternatives range over three orders of magnitude. Alternative B is expected to have the smallest impact, but even this alternative will result in exceedances of water quality criteria over many acres , even if only one dredge is used. The dredging operations included in this alternative can be completed in about two months if two dredges are used, but the impacts on water quality may persist after the dredging is completed. Alternatives E, I, and J would result in exceedances over much larger areas and longer time periods than any of the other alternatives. As measured by the WQI index values, the overall water quality impacts of Alternative J would be more than 2,600 times as severe as the impacts of Alternative B.

The duration of the impacts associated with each alternative depends on the number of dredges used. As described in the FS, Alternatives B, C, D, D2, F1, and F2 would be implemented with two dredges; four dredges would be used for each of the other alternatives. Alternative J would require four dredges operating for approximately 14 years (based on a 30-week dredging seasons). Under these implementation plans, the impacts of Alternatives B, C, and (perhaps) D could all occur in a single year; however, the water quality impacts for Alternative B would occur over a much smaller area.

I.2.5 IMPACT OF RESUSPENSION ON RECOVERY OF PROFUNDAL SEDIMENTS

Dredging and capping activities in the littoral SMUs will result in resuspension of sediments in the vicinity of the dredge. Some fraction of these resuspended sediments will eventually be redeposited in the profundal zone. The influx of sediments to the profundal zone resulting from

[1] The exception is the assessment of potential impacts on sediments in the profundal zone, described in Subsection I.2.5 of this appendix.

remedial activities conducted in the littoral zone may affect the rate of natural recovery at the profundal sediment-water interface. If the mass of CPOIs associated with this influx of sediments is high, implementation of remedial activities in the littoral zone may result in substantial increases in the time to natural recovery of the profundal sediments.

The potential impacts of each lake-wide dredging alternative on the recovery of the profundal sediments were investigated. The methods and results of this investigation are described in the following subsections.

I.2.5.1 Methods

The general method used to evaluate potential impacts on the profundal sediments was to (1) characterize the effects of the dredging alternatives on the rates and concentrations of sediments being deposited in the profundal zone, then (2) compare these rates and concentrations to the corresponding values that would be expected in the absence of dredging. The rates and concentrations of sediments resuspended by dredging were estimated using the models described in Appendix L, dredging issues. The corresponding values to which these estimates were compared are provided in Appendix N, monitored natural recovery, which describes a predictive model for forecasting the rates of natural recovery in the profundal zone. This predictive model forecasts the future concentrations of mercury in the profundal sediments as a function of current and future conditions. Mercury is the only CPOI addressed by the monitored natural recovery model. The current and potential future conditions are represented by ranges of values for various model input parameters.

The rate of natural recovery of the surface sediments in the profundal zone may be affected by two factors that are directly related to dredging: (1) the rate of deposition of new sediments in the profundal zone and (2) the concentrations of CPOIs associated with these new sediments. These characteristics of the sediments that would be resuspended by each of the lake-wide dredging alternatives were estimated using the SMU-specific CSTR models described in Appendix L, dredging options. As noted there, a complex water quality model of Onondaga Lake that can determine the fate of resuspended sediments and CPOIs adsorbed to them is not available. Therefore, a simpler approach was developed based on the assumption that the resuspended sediments would be redeposited evenly throughout the profundal zone.

Appendix L indicates that dredging of 100,000 CY with a loss rate of 1 percent would contribute about 0.01 centimeters (cm) of sediment over the profundal zone (an area of approximately 8 million square meters). This is very likely an overestimate of the actual thickness, because it assumes that all of the resuspended sediment is redeposited in the profundal zone. This is unlikely; some of the resuspended sediment will probably be carried out of the lake by the outflow, and some may be redeposited in the littoral zone. As suggested in Appendix L, a contribution of 0.01 cm of sediment is not likely to be significant.

The CSTR models described in Appendix L, dredging issues, provide estimates of the concentrations of the CPOIs on the sediments resuspended during each of the SMU-specific dredging alternatives. The mercury concentration estimates generated for the larger CSTR in each SMU-specific dredging alternative were used to estimate the mercury concentration on the resuspended sediments that settle into the profundal zone. Use of the concentration estimates for the larger CSTR accounts for partitioning between the resuspended sediments and the water column during migration from the point of resuspension to the profundal zone.

The estimated sediment flux rates and mercury concentrations developed for the SMU-specific dredging activities were combined to estimate rates and representative mercury concentrations for each lake-wide dredging alternative. These parameters were then compared to the range of input values established in Appendix N, monitored natural recovery, for the one-dimensional predictive model for natural recovery.

I.2.5.2 Application of the Methods to Onondaga Lake

The sediment flux rate for each lake-wide alternative was estimated by assuming that all of the resuspended sediments (1 percent of the sediments to be dredged) would be redeposited in the profundal zone over a period equal to the duration of dredging. This is expected to overestimate the actual sediment flux, because a significant fraction of the resuspended sediment may be flushed from the lake, while other fractions may settle out in the littoral zone, at least initially. In addition, the settling rates and the depth of the lake suggest that the time required for the resuspended sediment to settle to the bottom of the profundal zone will be longer than the duration of dredging in some of the SMUs.

The mercury concentrations developed for the SMU-specific dredging activities were combined to estimate the average mercury concentration for the resuspended sediments associated with each lake-wide dredging alternative. Specifically, the particulate-phase concentrations for the dredged-area CSTR in each SMU were used to calculate weighted average concentrations for each lake-wide alternative. The weights used in the averaging were based on the volume of sediment resuspended by dredging in each SMU.

The sediment flux rates and mercury concentrations for each lake-wide alternative were combined with the mid-range values of the two corresponding model input parameters established in Appendix N, monitored natural recovery. This procedure provided estimates of the total flux rates and sediment concentrations that would result from adding the sediments resuspended by dredging to the sediments expected from other sources. These combined sedimentation flux rates and mercury concentrations were compared to the ranges of input values for these parameters established in Table N.9 of Appendix N, monitored natural recovery.

I.2.5.3 Results

None of the estimated sediment flux rates and mercury concentrations that account for the effects of the lake-wide alternatives exceeds the high-end input values for these parameters. This indicates that the impacts of dredging on these two parameters are within the range of uncertainty established in Appendix N, monitored natural recovery. These results were obtained using estimates of the sediment flux rate that were biased high; the actual flux rates are expected to be substantially lower. Even these conservative estimates do not suggest that the impacts of dredging on the profundal zone will exceed the range of uncertainty established in Appendix N, monitored natural recovery. Therefore, these impacts cannot be identified as significant, and more detailed analyses are not warranted.

I.2.6 IMPACT OF DISCHARGES OF DEWATERING EFFLUENT

Five potential levels of water treatment were described in Appendix K. As described in Section 4, advanced water treatment was selected for incorporation into each lake wide alternative to provide for a basis of comparison between alternatives. Water quality monitoring of the effluent will be conducted to ensure that end-of-pipe discharge limits (to be established by NYSDEC) are being met. However, there may be times when the concentrations of CPOIs in lake water are elevated, even if the potential impacts of dredging and discharges on the water column are controlled by appropriate engineering measures. To address this possibility, the total volume of flow through the supernatant water treatment system (without consideration of CPOI concentrations) can be used as a simple index of the potential impacts on water quality associated with each lake-wide dredging alternative. The total volume of sediments dredged determines the volume of treated effluent that, if uncontrolled, could contribute to the total water quality impacts of dredging and cause increases in the extent or duration of exceedance of the water quality criteria. The volume of effluent produced by each lake-wide alternative is considered to be a constant multiple of the in-place volume of sediments to be dredged. Appendix L, dredging issues, indicates that this multiplier will vary with the porosity of the in-place sediments, but is likely to range from a factor of about 4 to 6. Therefore, the discharge index discussed in this appendix is calculated by applying a multiplier of 5 to the in-place volume of sediments to be dredged in each SMU.

The total volume of effluent generated under each lake-wide alternative is provided in Table I.13. The effluent volumes are expressed in cubic yards, but also as ratios to the total effluent volume associated with Alternative B (which has the smallest total volume). If the frequency of equipment failures and extreme events potentially resulting in uncontrolled discharges is constant from one alternative to the next, these ratios represent the relative potential for negative impacts on water quality. The expected total effluent volume ranges from 1,115,000 CY for Alternative B to 100,605,000 CY for Alternative J. The total volumes for Alternatives C, D, D2, F1 and F2 are less than a factor of 10 times the total volume for Alternative B. The total volumes for Alternatives F3, F4, G, and H are 11 to 17 times the total volume for Alternative B. The total volumes for Alternatives E, I, and J (which have the largest volumes) are 50 to 90 times the total volume for Alternative B.

I.2.7 VOLATILIZATION OF ORGANICS DURING MATERIALS HANDLING

Because the sediment to be dredged contains volatile and semi-volatile organic contaminants, volatilization of CPOIs will occur during the dredging and materials handling process associated with remediation. To evaluate the potential significance of these air emissions, the risks to workers and off-site receptors were evaluated. The methods and results of this evaluation are described in the following subsections.

I.2.7.1 Methods

As discussed in Section 4.6 of the FS, the dredging and sediment management options initially considered were:

- Option 1: Hydraulic dredging with on-site consolidation at the SCA and
- Option 2: Mechanical dredging with off-site disposal at a non-hazardous waste landfill.

Under Option 1 (the preferred option for the lake-wide alternatives), the most significant emission sources are expected to be the SCA and the water column immediately around the dredge head.

To estimate potential inhalation risks associated with the various lake-wide alternatives and emissions from each of these sources, dispersion modeling was used to estimate the CPOI concentrations in ambient air at proximate receptor locations. These modeled concentrations were compared with various health risk-based benchmarks to evaluate potential risks to workers and residential/commercial receptors in the vicinity of the lake. These benchmarks were developed consistent with USEPA guidance on risk assessment (USEPA, 1991) and data available for CPOI odor thresholds (AIHA, 1989).

Under Option 2, there is no SCA; rather, the dredged materials are solidified prior to off-site transportation, so that the most significant emission source, in addition to the water column around the dredge head, is expected to be the mixing pad and handling operations associated with the solidification operation. To compare the potential air emissions of Options 1 and 2, the methods described above were also applied to the emissions from the mixing pad.

I.2.7.2 Application of Methods to Onondaga Lake

I.2.7.2.1 Model Selection

USEPA's AERMOD model was used to perform the dispersion modeling. AERMOD is an advanced steady-state plume model that can predict short-term and long-term chemical concentrations at specific downwind locations as a function of wind speed, atmospheric stability, temperature gradient, mixing height, and downwind distance. USEPA is in the process of establishing AERMOD as its recommended model (replacing ISC3) for the following applications: (1) industrial source complexes; (2) rural or urban areas; (3) flat or rolling terrain; (4) transport distances less than 50 kilometers; (5) one-hour to annual averaging times; and (6) continuous air emissions. All modeling was performed in accordance with USEPA guidance as specified in the *Guideline on Air Quality Models (Revised)* (USEPA, 2003b).

I.2.7.2.2 Meteorological Data and Land Use Classification

AERMOD uses hourly meteorological data to define the conditions for atmospheric dispersion. The primary meteorological data required include hourly surface wind speed, wind direction, temperature, and cloud cover. Surface characteristics such as surface roughness, Bowen ratio, and albedo are also required. These data are used to calculate other parameters such as friction velocity, Monin-Obukhov length, convective velocity scale, temperature scale, mixing height, and surface heat flux. The model then estimates the theoretical concentration for each source receptor combination for each hour of input meteorological data and calculates the user-selected short-term averages.

To generate the required input meteorological data files required for the AERMOD model, surface meteorological and upper air files were obtained from the WEBMET Web site for 1987 through 1991, the most recent five-year period for which a complete set of data was readily available. Among these five years, the data from 1989 were determined to result in the most conservative results. The surface meteorological data were collected by the National Weather Service (NWS) at the Syracuse Hancock International Airport, located approximately 5 miles (8 kilometers [km]) northeast of the center of the lake. For upper air data, the closest NWS station for which the appropriate data are available is the Greater Buffalo International Airport, located approximately 109 miles (175 km) west of the center of the lake. A wind rose plot for these data is shown in Figure I.7. As shown on this plot, the predominant winds are from the west-northwest and east-southeast.

AERMOD selects the appropriate dispersion coefficients and wind-profile exponents for an indicated atmospheric stability based on the urban/rural classification of the modeled area. The method used for this determination is the Auer Land Use classification method described in USEPA's *Guideline on Air Quality Models* (2003b). Due to the large portion of the study area taken up by the lake, the study area was considered rural for the dispersion modeling. Regulatory default values were used for all other modeling options.

I.2.7.2.3 Source and Receptor Configuration

Figure I.8 shows the study area for the dispersion modeling, along with the receptor grid. An 8.6 mile (13.8 km) (east/west) by 5.6 mile (9 km) (north/south) Cartesian receptor grid with 985-ft (300-m) resolution was used. The grid is centered on the middle of the lake, extending approximately 4.3 miles (7 km) to the north and south, and 2.8 miles (4.5 km) to the east and west. In addition, selected discrete receptors were identified that represented locations of particular concern where sensitive subpopulations (e.g., schoolchildren) or large numbers of people might be present (e.g., shopping mall, fairgrounds).

I.2.7.2.4 Characterization of Emission Rates

Emission rates for each of the three primary source areas were developed, as follows:

Dredging Emissions

Emissions from the water column immediately around the dredge head were based on the algorithms provided in Appendix L, dredging issues, as summarized below. The volatilization rate during dredging was estimated using the following equation:

$$ER = K_{ov}A\left(C_w - \frac{C_a}{H}\right)$$

where:

ER = emission rate (g/hr)

Kov = overall mass transfer coefficient (cm/hr)

A = exposed surface area (cm2)

Cw = concentration of CPOI in the water (g/cm3)

Ca = concentration of CPOI in the air (g/cm3)

H = Henry's Law Constant (unitless)

For very volatile compounds such as benzene and toluene, H is sufficiently large that the second term is negligible relative to the first and the volatilization rate is largely defined by the water-side mass transfer coefficient.

The overall mass transfer coefficient is estimated as follow:

$$\frac{1}{K_{ov}} = \frac{1}{k_w} + \frac{1}{Hk_a}$$

where:

Kov = overall mass transfer coefficient (cm/hr)

kw = liquid phase mass transfer coefficient of CPOI (cm/hr);

ka = gas phase mass transfer coefficient of CPOI (cm/hr).

The water-side mass transfer coefficient is calculated as follows:

$$k_w = 0.094 v_a^2 \left(\frac{74}{MW} \right)^{1/4}$$

where:

kw = liquid phase mass transfer coefficient of CPOI (cm/hr);

va = wind speed measured at height of 10 m above the ground (m/sec)

MW = molecular weight of the CPOI (g/mole)

The air-side mass transfer coefficient is calculated as follows:

$$k_a = 861\, v_a A^{-0.05} \left(\frac{74}{MW} \right)^{1/4}$$

where:

ka = gas phase mass transfer coefficient of CPOI (cm/hr).

A = surface area (acres)

va = the wind velocity (m/sec)

Different approaches were used for modeling short-term and long-term emissions. Long-term emissions were assumed to occur across the entire dredged area within each SMU, and are based on average concentrations across the sediment being dredged for each alternative. Short-term emissions were assumed to occur from a 100-ft diameter area around the dredge head. To evaluate a range of potential short-term emissions, these emissions were also based on the average concentrations in the sediment being dredged for each alternative.

Average water concentrations were based on the total dredge volume, the total surface area of the dredging activity, the average concentrations for each contaminant over the dredge depth, and the average post-dredge water depth during the dredging event, which is calculated as the existing water depth plus one-half of the average dredge cut. For all CPOIs, the area-weighted average concentrations are based on samples collected across the entire area of each SMU in 3.3-ft (1 m) increments with depth. The values for the average water concentrations are presented in Attachment D. The differences among the alternatives in risks associated with the dredging operations will be a function of the average water concentrations and the sizes and configurations of the SMUs included in each alternative, and also the dredging duration in the case of the longer terms risks. The input parameters for this method are based on a conservative estimate for hydraulic or mechanical systems based on available published data from completed projects. There may be newer mechanical dredging systems which could result in less resuspension and resulting emissions than estimated.

Dredging Emissions - NAPL Scenario

In addition to these volatilization emissions associated with routine dredging operations, an evaluation was performed to assess the potential emissions that could occur if NAPL containing volatile organic compounds (VOCs) in the dredge materials were encountered, in particular at SMU 2. While there are very limited NAPL characterization data, heavily-stained fill material was observed, and elevated concentrations of benzene and chlorobenzene were detected in porewater and sediment samples collected from SMU 2 (see Appendix B, sediment management units). These findings suggest that NAPL containing benzene and chlorobenzene may be encountered in this SMU in quantities sufficient to result in saturation of the water column and with correspondingly high air emissions of these VOCs for some limited time period. Volatilization emissions were estimated using the same algorithms as provided in Appendix L, dredging issues, but assuming that the dredging of materials containing NAPL results in water column concentrations equivalent to the mean solubility limit.

A mass balance was used to determine the potential for sufficient mass being present in the sediment for saturation of the water column to occur. Based on a water column with a 100-ft (31-m) diameter (i.e., immediate area around the dredge head) and a post-dredge water depth of 9 ft (2.7 m) for SMU 2, the volume of the water column is 70,686 ft^3 (2,001,611 L). Based on a solubility for benzene of 1,780 μg/L, the mass required to achieve saturation is 3,563 g or 3.6 kg. Based on a solubility for chlorobenzene of 428 μg/L, the mass required to saturate is 857 g, or 0.9 kg. Based on these relatively low quantities, it was judged feasible for the water concentration to reach the saturation limits should NAPL be encountered.

SCA Emissions

Emissions from the SCA for hydraulically dredged sediments were based on the same algorithm used for the point of dredge described above. This emission source was modeled as an elevated area source based on the diked configuration of the SCA on Wastebeds 12, 13, and 14. For some of the alternatives with larger SCA areas, the SCA was assumed to extend onto Wastebed 15. The configurations of the SCA for each alternative were as follows (obtained from Appendix F, cost estimates):

- Alternative B – 28 acre area; 14 ft (4.3 m) dike height
- Alternative C – 54 acre area;14 ft (4.3 m) dike height

- Alternative D – 84 acre area; 14 ft (4.3 m) dike height
- Alternative D2 – 112 acre area; 14 ft (4.3 m) dike height
- Alternative E – 262 acre area; 50 ft (15.2 m) dike height
- Alternative F1 – 112 acre area; 14 ft (4.3 m) dike height
- Alternative F2 – 172 acre area; 14 ft (4.3 m) dike height
- Alternative F3 – 215 acre area; 14 ft (4.3 m) dike height
- Alternative F4 – 257 acre area; 14 ft (4.3 m) dike height
- Alternative G – 308 acre area; 14 ft (4.3 m) dike height
- Alternative H – 325 acre area; 14 ft (4.3 m) dike height
- Alternative I – 282 acre area; 50 ft (15.2 m) dike height
- Alternative J – 442 acre area; 50 ft (15.2 m) dike height

The liquid phase concentrations used for the source term in the model were based on the average of the dissolved CPOI concentration in the influent and supernatant after primary treatment, as calculated in Attachment A to Appendix L, dredging issues. The differences among the alternatives in the risks associated with SCA emissions will be a function of the dissolved CPOI concentration, the size of the SCA, and the dike height, and also the dredging duration in the case of the longer term risks.

Solidification Emissions

Emissions from the mixing pad and handling operations associated with the solidification operation were based on USEPA's model for estimating VOC emissions from stabilization/solidification processes (USEPA, 1993), which is based on a mass balance equation presented by Thompson *et al*. (1991). This emission source was modeled as a ground-level area source, assumed to be a one-acre square pad located in the center of Wastebed B. The emission rate from the mixing pad was estimated using the following equation:

$$ER = C \times F \times (2.78\times10^{-7}) \times (V / 100)$$

where:

ER = emission rate (g/sec);

C = concentration of CPOI in sediment (μg/g);

F = treatment feed rate of sediment (kg/hr);

2.78×10^{-7} = conversion factor [(g/kg)(g/µg)(hr/sec)]; and

V = fraction of CPOI volatilized percent.

For modeling emissions from the mixing pad, the fraction of CPOI volatilized was assumed to be 80 percent, which is a default assumption provided in the USEPA guidance (USEPA, 1993) and is considered to be highly conservative and appropriate for preliminary risk evaluation purposes. The differences among the alternatives in the risks associated with the mixing pad will depend solely on the average sediment concentrations for each alternative, and also on dredging duration in the case of the longer term risks.

I.2.7.2.5 Estimation of Predicted Exposure Concentrations and Risks

To evaluate both short- and longer-term risks, the theoretical one-hour maximum and annual average air concentrations in milligrams per cubic meter (mg/m^3) were calculated at each receptor point of interest for each CPOI.[2] Dispersion factors at each receptor location based on a unit emission flux of 1 $g/s/m^2$ were developed for each area emission source. These dispersion factors were combined with emission rates for each CPOI from each source to calculate theoretical exposure concentrations in ambient air at each receptor location. These concentrations were combined with appropriate toxicity data and exposure assumptions to develop theoretical risk estimates at each receptor location and to identify the point of maximum impact. Maximum eight-hour concentrations were also estimated for comparison with the OSHA permissible exposure limit (PEL). Exposures to workers were evaluated by scaling the predicted maximum one-hour concentration by a scaling factor of 0.7 to estimate the maximum concentration for an eight-hour averaging period, in accordance with USEPA screening guidance (USEPA 1992). The risk calculations are summarized in Attachment D.

Exposure concentrations for the entire remedy implementation period were based on the area-weighted average sediment concentrations across the total dredge areas for all SMUs, taking into consideration the range of expected meteorological conditions throughout a year. For estimating short-term exposure concentrations, maximum potential one-hour exposure concentrations were calculated using the average sediment concentrations for each SMU under each alternative. In practice, there will be variations in sediment concentrations such that higher sediment concentrations may be encountered during worst-case meteorological conditions. However, such conditions are only likely to occur relatively infrequently, and in the case of the SCA where the residence time is approximately 36 hours, mixing will tend to dilute the impact of effluent associated with dredging of higher sediment concentrations. Accordingly, the

[2] In the context of the implementation risk evaluation, the distinction is made between longer-term risks based on emissions over the entire remedy implementation period and short-term risks based on one-hour or 24-hour averaging periods. Both the short-term and “longer-term” risks evaluated here provide input to the short-term effectiveness criterion for evaluation of alternatives.

variability of sediment concentrations has not been addressed quantitatively in this analysis, but should be considered at the remedial design stage in the context of operations and maintenance.

Consistent with USEPA guidance (1991), theoretical risks were characterized separately for CPOIs that are classified as potential carcinogens (chemicals determined by the USEPA to have the potential to cause cancer) and CPOI that are classified as noncarcinogens. USEPA has conducted toxicity and dose response assessments on many of the most frequently occurring environmental chemicals and has developed toxicity values for use in risk assessment based on these analyses. Cancer and noncancer toxicity values were obtained from USEPA's Integrated Risk Information System (IRIS) data base. For certain compounds that do not have toxicity factors listed in IRIS, NYSDEC has established Annual Guideline Concentrations (AGC) values based on potential carcinogenic or noncancer effects. The USEPA toxicity data used in this assessment were supplemented by these AGC values where toxicity factors were not listed in IRIS.

In evaluating potential cancer risks for each source and pathway, the following general formula was used:

$$\textit{Excess Lifetime Cancer Risk} = \textit{Total Exposure Dose x Cancer Slope Factor}$$

The cancer risk calculated from this equation represents the theoretical lifetime probability of developing an excess cancer case due to hypothetical exposures to emissions that occur during the dredging and materials handling process associated with remediation.

Unlike the measure of risk used for carcinogens on the basis of a theoretical probability of experiencing an adverse effect, the measure of the potential for noncarcinogenic risks to occur is expressed as a hazard quotient (HQ). The following general formula was used to calculate the HQ for noncarcinogens:

$$\textit{Hazard Quotient} = \frac{\textit{Average Exposure Dose}}{\textit{Noncancer Toxicity Value}}$$

The HQs for both chronic (annual) and acute (one-hour) averaging periods were evaluated based on average exposure dose over the appropriate period and presented in separate tables. In addition, the one-hour concentrations were compared to odor thresholds. The odor thresholds were based on a study by the American Industrial Hygiene Association (AIHA) that evaluated multiple sources of odor threshold values and established mean values based on those sources satisfying certain evaluation criteria based on the quality of the data (AIHA, 1989). Note that there is considerable variability associated with reported odor threshold values: for naphthalene, the CPOI of most relevance to this evaluation, the odor threshold values ranged from 0.05 mg/m^3 to 3.4 mg/m^3, with a mean value of 0.2 mg/m^3.

Consistent with USEPA guidance (1991), theoretical cancer risks posed by individual CPOIs were added together to calculate the total incremental cancer risk associated with remediation. The overall potential for chronic noncarcinogenic health effects of systemic toxicants was determined by adding together HQ values for those individual CPOIs to calculate an overall hazard index (HI). For short-term averaging periods, the HQ values were calculated for each applicable chemical, and the chemical with the maximum HQ value was evaluated. The health-based benchmarks and odor thresholds used in this evaluation are summarized in Table I.14.

I.2.7.3 Results

I.2.7.3.1 Longer-Term Risks

The longer-term impact of air emissions over the remedy implementation period was evaluated by using risk assessment methods consistent with USEPA guidance (1991), taking into consideration the NYS AGCs.

- **Longer Term Cancer Risks Associated with Dredging Emissions:** Predicted cancer risks associated with emissions from the point of dredge were evaluated quantitatively for Alternative J, the alternative with the greatest acreage and volume of sediments dredged during the implementation period. At the point of maximum exposure, the cumulative predicted cancer risk associated with point of dredge emissions for Alternative J was 6.0×10^{-10}, well below the USEPA's regulatory benchmark for Superfund remedy evaluation of 1×10^{-6}. Predicted cancer risks associated with point of dredge emissions for other alternatives were not evaluated quantitatively, but would not exceed either the Alternative J results or the 1×10^{-6} benchmark, given the smaller dredging areas and volumes associated with these alternatives.

- **Longer Term Cancer Risks Associated with SCA Emissions:** Cancer risks associated with air emissions from the SCA were evaluated for each of the lake-wide alternatives. At the point of maximum exposure, the predicted cancer risks for all of the alternatives are less than 1×10^{-6}, USEPA's regulatory benchmark for Superfund remedy evaluation. The highest predicted cancer risk is 5×10^{-7} for Alternative J.

- **Longer Term Noncancer Risks Associated with Dredging Emissions:** For noncancer risk, the total hazard index for the dredging operations for Alternative J is 0.0003, which is well below the regulatory benchmark of 1. The noncancer risks associated with dredging operations were not evaluated quantitatively for the other alternatives, but would all be expected to be lower than both the HI for Alternative J and the regulatory benchmark of 1.

- **Longer Term Noncancer Risks Associated with SCA Emissions:** The hazard index for the SCA is less than 1 for Alternatives B C, D, D2, and F1, and greater than 1 for the other alternatives (Alternatives E, F2, F3, F4, G, H, I and J), with HI values ranging from 1.2 to 5.4. For Alternative G, which had the highest HI of 5.4, the area of exceedance extends a maximum of approximately 1,700 meters from the boundary of the SCA. (Note that the predicted risk for Alternative G is slightly higher than for Alternative H because of the higher emission flux from the SCA associated with the dredging of SMU 2.) Engineering controls could be used to mitigate some of this risk. It is also noted that the longer term noncancer risks associated with SCA emissions are significantly less than longer term noncancer risks associated with the mixing pad (as described in Section I.2.7.3.3 below).

A summary of the maximum potential longer-term risks is presented in Table I.15.

I.2.7.3.2 Short-Term Risks

Short-term risks to off-site receptors associated with air emissions were evaluated by comparison of the maximum predicted one hour concentration for each CPOI to the NYS Short-term (1-hour) Guideline Concentrations (SGC) and the odor threshold.

- **Short Term Risks Associated with Dredging Emissions:** No exceedances of any of the SGCs were predicted for off-site receptors from emissions at the point of dredge, as shown in Table I.16, with the possible exception of situations when NAPL may be encountered (see Subsection I.2.7.3.4)..

- **Short Term Risks Associated with SCA Emissions:** No exceedances of any of the SGCs were predicted for off-site receptors from emissions at the SCA, as shown in Table I.16.

- **Odors Associated with Dredging Emissions:** The odor threshold was not exceeded for any CPOI due to emissions from the point of dredge.

- **Odors Associated with SCA Emissions:** The odor threshold was exceeded for the SCA for Alternatives D2, F1, F2, F3, F4, G, H, and J by factors ranging from 1.1 to 2.2. Engineering controls could be used for mitigation. It is also noted that the short-term odors associated with SCA emissions are significantly less than short-term odors associated with the mixing pad (as described in Section I.2.7.3.3 below).

Worker risks associated with air emissions were evaluated by comparison of the 8-hour maximum concentration to the OSHA PEL. Exposures to workers were evaluated by scaling the predicted maximum one-hour concentration by a scaling factor of 0.7 to estimate the maximum concentration for an eight-hour averaging period, in accordance with USEPA screening guidance (USEPA 1992).

- **Worker Exposures Associated with Dredging Emissions:** Exposures to workers operating the dredge are not estimated to exceed the OSHA PEL, with the possible exception of situations when NAPL may be encountered (see Subsection I.2.7.3.4).

- **Worker Exposures Associated with SCA Emissions:** Worker exposures at the SCA are not expected to exceed the OSHA PEL.

In comparing the results for short term risks among alternatives, it is also important to consider the exposure duration. Due to variations in the sediment concentrations and meteorological conditions, the short-term air concentrations will fluctuate over the course of the dredging operations. While the magnitude of the relative risks at the point of maximum exposure are comparable for Alternatives D through J, the duration of Alternative J (105 months) is approximately seven times longer than those of Alternative D (9 months) (see Appendix F, cost estimates for dredging durations). Thus, the potential for short duration exceedances of the health-based benchmarks and odor thresholds under worst-case meteorological conditions is significantly higher for Alternative J or other alternatives with multi-year durations (e.g. Alternative E, 59 months and Alternative I, 63 months). As noted previously, the potential impact of variability in sediment concentrations should be considered at the remedial design stage in the context of operations and maintenance.

I.2.7.3.3 Comparison of SCA and Mixing Pad

In addition to risks associated with emissions from the SCA, Tables I.15 and I.16 provide a summary of the potential risks associated with emissions from the mechanical sediment handling mixing pad, which would be used for the off-site disposal option during solidification operations prior to off-site transport.

- **Longer Term Cancer Risks Associated with Mixing Pad Emissions:** The long term cancer risks for the mixing pad were a factor of 2 to 16 higher than the SCA. The maximum predicted cancer risks associated with emissions from the mixing pad are less than $1x10^{-6}$ for Alternatives B, C, and D and equal to or greater than $1x10^{-6}$ for Alternatives D2 through J, with risks ranging from $1x10^{-6}$ to $3x10^{-6}$. For the SCA, the maximum cancer risks were less than $1x10^{-6}$ for all alternatives.

- **Longer Term Noncancer Risks Associated with Mixing Pad Emissions:** The long term noncancer risks for the mixing pad were a factor of 5 to 50 higher than for the SCA. The hazard quotient for the mixing pad is less than one for Alternative B only, and exceeds 1 for all of the other Alternatives, with HQ values ranging from 8 to 32.

- **Short Term Risks Associated with Mixing Pad Emissions:** Based on the average sediment concentrations, maximum one-hour concentrations of CPOIs from the SCA are not predicted to exceed their respective SGCs. However, maximum one-hour concentrations associated with emissions from the mixing pad (based on the average sediment concentrations) could potentially exceed the SGCs under Alternatives C through J by up to a factor of 5.

- **Odor Threshold Exceedances Associated with Mixing Pad Emissions:** While the emissions from the SCA are predicted to potentially exceed the odor threshold for naphthalene of 0.2 mg/m^3 under Alternatives F1 through J by a factor ranging from 1.1 to 2.2, emissions from the mixing pad are predicted to exceed this odor threshold under all Alternatives by a factor ranging from 3 to 164. ,

- **Worker Exposures Associated with Mixing Pad Emissions:** Exposures to workers at the mixing pad were evaluated by scaling the predicted maximum one-hour concentration by a scaling factor of 0.7 to estimate the maximum concentration for an eight-hour averaging period, in accordance with USEPA screening guidance (USEPA 1992). Worker exposures at the mixing pad are not expected to exceed the OSHA PEL.

Based on these results, the risks at the point of maximum exposure resulting from the use of the mixing pad are estimated to be greater than those associated with the use of the SCA.

I.2.7.3.4 Impact of NAPL

The only air quality issue identified for emissions from the point of dredge was associated with the potential to encounter NAPL-containing VOCs in the dredge materials, in particular at SMU 2. Assuming that the dredging of materials containing NAPL results in water column concentrations equivalent to the mean solubility limit:

- The maximum one-hour air concentration of benzene resulting from emissions during the dredging of NAPL has the potential to exceed the SGC for benzene of 1.3 mg/m^3 by a factor of 33, as shown in Attachment D.

- The predicted air concentration of benzene at the point of dredge has the potential to exceed OSHA PEL values for workers operating the dredge by a factor of 9, as shown in Attachment D.

- The maximum one-hour air concentration has the potential to exceed the odor threshold for naphthalene (0.2 mg/m^3) by a factor of 3, dichlorobenzene (0.7 mg/m^3) by a factor of 2, and chlorobenzene (6 mg/m^3) by a factor of 2.

In the absence of more complete site characterization data, it is reasonable to assume that the greater the volume of material dredged, the greater the probability of encountering NAPL. This condition is, therefore, considered more likely to occur as the volumes of dredged materials in SMU 2 increase from zero for Alternative B to Alternatives C , D, D2, F1, F3, F4, and G (169,000 CY) to Alternative H (403,000 CY) to Alternatives E and I (533,000 CY) to Alternative J (1,016,000 CY).

I.2.8 TEMPORARY LOSS OF LAKE HABITAT

Dredging of sediments and capping or backfilling the dredged area would temporarily impact the existing benthic macroinvertebrate communities by either removing them and/or their habitat or by burying these organisms under the clean cap or backfill materials (the resultant habitat will be of greater value to both human health and the environment). In addition to direct impacts on the habitat of the benthic organisms in the affected areas, indirect effects may be experienced by fish and terrestrial wildlife that forage on these organisms or by fish that use submerged macrophytes for spawning or nursery areas. Potential negative effects could be diminished by planning dredging/capping activities to avoid peak essential fish habitat windows, i.e. times of year when fish spawning or migration would be expected. However, the net effect of the dredging/capping activities would be to eliminate the benthic community during the active remediation period, with reduced benthic communities into the recolonization period.

Studies of benthic recolonization indicate that benthic macroinvertebrates can recolonize sediments within a year following disturbance (Niemi *et al*., 1990). Recolonization rates could vary from SMU to SMU. For example, SMUs with input from a river or large creek would likely recover faster than SMUs isolated from a source of benthic communities; SMUs with targeted dredging and capping would recover faster than SMUs with dredging and isolation caps. For the purpose of this evaluation, a re-colonization period of one year was assumed (Niemi *et al*., 1990). Applying these considerations to the comparison of alternatives, the relative significance of the temporary loss of habitat would be a function of time, areal extent, and potentially the value of habitat impacted. While there are differences in habitat value among individual SMUs, these differences were not judged to be significant to the comparison of alternatives because each alternative addresses a portion of each SMU. The areal extent of impacted areas (i.e., either dredged or capped areas) and the duration of dredging and capping activities are different for different alternatives; therefore, the comparison reduces to one of area and time. On this basis, the habitat recovery index (acre-year) was calculated as follows:

Habitat Recovery Index = Impacted Area x (Duration of remedy construction + Duration of habitat recolonization)

The acreage of impacted areas, durations of remedy construction and re-colonization as well as the habitat recovery index for the 13 active lake-wide alternatives are summarized in Table I.17, and Figure I.9. The habitat recovery index value is 1,424 for Alternatives B, C, and D; 1,568 for Alternative D2; 2,895 for Alternatives F1, F2, F3, F4, G, and H; 3,560 for Alternative E; 6,369 for Alternative I; and 50,922 for Alternative J.. Reflecting an increase in the size of the impacted area and the duration of remedy construction, the habitat recovery index increases gradually for the low dredged volume alternatives, with a sharp increase in going from Alternative I to the highest dredge volume Alternatives J. The habitat recovery index for Alternative J is a factor of approximately 36 higher than that for Alternative B.

I.2.9 OTHER QUALITY OF LIFE IMPACTS

In addition to the potential odor impacts described in Subsection I.2.7, other potentially significant quality of life impacts to the local community in the vicinity of the lake include the following:

- Public access to certain operational areas of the lakeshore associated with the dredging, capping, and backfilling operations would be restricted during the implementation period to eliminate direct community exposure to hazards associated with equipment and truck activity. The community would also be restricted from using portions of the lake during construction. The length of these restrictions or delays, while not fully defined at this point, would be related to the remedy implementation times (durations obtained from Appendix F, cost estimates), which range from three years for Alternatives B, C, D, and D2; four years for Alternatives F1, F2, F3, F4, G, and H; nine years for Alternative E; 10 years for Alternative I; and 17 years for Alternative J.

- Increased truck traffic would be experienced in the vicinity of the site during remedy implementation. In particular, trucks transporting SCA construction materials would exit from the site at Wastebed 13 and would pass through a limited section of residential area (approximately 25 to 30 homes located within a 0.5 mile distance). The total number of truckloads required for transporting SCA construction materials to the site ranges from approximately 45,000 to 200,000 for Alternatives B, C, D, D2, and F1; approximately 300,000 to 600,000 for Alternatives F2, F3, F4, G, and H; and approximately 1,400,000 to 2,400,000 for Alternatives E, I, and J. (See Table B.4 in Attachment B).

Also, depending on the stockpile location selected for imported capping and backfill materials, there is potential for significant additional impacts of truck traffic on local routes. For example, if Wastebed B were to be selected as the staging area for imported capping/backfill materials, trucks transporting these materials to Wastebed B would pass directly in the vicinity of the New York State Fairgrounds and parking area, the venue of a variety of community activities year-round, including the New York State Fair held annually over a twelve day period in late August and early September and attended by approximately 1,000,000 people. The total number of truckloads required for transporting capping and backfill materials to the site are estimated to ranges from approximately 150,000 to 200,000 for Alternatives B, C, D, D2, F1, F2, F3, F4, G, and H; and from approximately 500,000 to 1,200,000 for Alternatives E, I, and J (see Table B.4 in Attachment B). The impact of such truck traffic would be especially significant for Alternative J, considering the lengthy duration of the remedy implementation period as well as the large quantities of materials expected to be transported, which translates to a significantly larger number of trucks traveling through local routes for longer periods of time.

SECTION I.3

POST-REMEDIATION RISKS

I.3.1 BACKGROUND

I.3.1.1 Consideration of Residual Risk in the Remedy Selection Process

Residual risk refers to the potential risk to humans and ecological receptors remaining after implementation of remedial alternatives. The magnitude of residual risk is considered when evaluating remedial alternatives and is considered under overall protectiveness of human health and the environment and under long-term effectiveness, two of the seven CERCLA evaluation criteria. Residual risk estimates assist in the comparison of remedial alternatives and in the determination of the efficacy of the preferred remedy in addressing baseline risks to human health and environment.

According to NYSDEC guidance, the magnitude of remaining risk is a component of the long-term effectiveness and permanence criterion, and can be expressed "quantitatively, such as by cancer risk levels, or margins of safety over NOELs *[no observed effects levels]* for non-carcinogenic effects, or by the volume or concentration of contaminants in waste, media or treatment residuals remaining at the site" (1990). USEPA has provided guidance on evaluation of residual risk to human health within the Risk Assessment Guidance for Superfund documentation (1991, 2001).[3] USEPA indicates that residual risks should be calculated using the same exposure assumptions and toxicity values[4] used in the site baseline assessment, but that calculations should be based on actual residual concentrations (1991).

This section explains the methods used to estimate residual risk in Onondaga Lake and presents the results of the residual risk analysis. The analysis is focused on potential risks to benthic macroinvertebrates, wildlife, and humans resulting from exposure to CPOIs in sediment, fish tissue, and water as identified in the BERA and HHRA (TAMS, 2002a, 2002b). The effects of remedial alternatives on stressors of concern (e.g., calcitic sediment) are discussed in Sections 4 and 5 of the FS report. The results of the residual risk analysis are used in Section 5 of the FS report to aid in the evaluation of lake-wide remedial alternatives.

I.3.1.2 Key Risk Concerns in Onondaga Lake

The key baseline human health and ecological risk concerns in Onondaga Lake are summarized in Tables I.18 and I.19. The HHRA identified potential risks to human health in

[3] http://www.epa.gov/superfund/programs/risk/ragsd/chapt5.pdf http://www.hanford.gov/dqo/project/level5/hhemc.pdf. EPA guidance is also available regarding residual risk related to application of air standards, but this is not applicable here.

[4] USEPA (1991) also notes that any changes in land use or updates to toxicity values should also be reflected in the post-remedial residual risk calculations.

Onondaga Lake related to two exposure pathways: fish consumption and wading in the south basin (i.e., direct contact and ingestion of sediment in less than 6 ft (2 m) water depth in the south basin). These potential risks were estimated assuming no fish consumption or sediment exposure advisories. Of these pathways, risk estimates associated with fish consumption were the highest and included both cancer and non-cancer risks. Risk estimates for sediment exposure in the south basin were related to cancer risks only. The key risk drivers for risk related to fish consumption are mercury, PCBs, PCDD/PCDFs, and arsenic. The key risk drivers for risk related to sediment exposure are arsenic, PAHs, PCDD/PCDFs, and hexachlorobenzene.

The BERA identified potential risks to benthic macroinvertebrates, wildlife, and aquatic organisms related to three exposure pathways: direct exposure to sediment; consumption of insects, benthic macroinvertebrates, and fish; and direct exposure to water. Sediment toxicity was a risk to benthic macroinvertebrates in Onondaga Lake, and the BERA noted moderate to severe impairment of the benthic community in the southern part of the lake, now termed SMUs 1, 2, 6, and 7.

The BERA also identified potential risks for fish and wildlife (birds and mammals) related to bioaccumulation (e.g., consumption of benthic macroinvertebrates, insects, and fish). The key risk drivers for fish consumption are mercury, polychlorinated biphenyls (PCBs), and DDT, while the key risk driver for consumption of benthic macroinvertebrates and insects (i.e., by tree swallow, little brown bat, and mallard) is total polycyclic aromatic hydrocarbons (PAHs). Other CPOIs posing risk to consumers of benthic macroinvertebrates and insects are barium, chromium, mercury, methylmercury, and selenium. These CPOIs were identified in Section 1 of the FS report as generating the highest risk estimates (i.e., hazard quotients) and/or contributing to risk estimates for multiple receptors. Finally, the BERA noted that fish were at risk based on concentrations of CPOIs in their tissue. Residual risk for fish is evaluated qualitatively in this residual risk analysis.

I.3.1.3 Residual Risks Evaluated

The following residual risks were evaluated for the lake-wide alternatives:

- Fish consumption (humans and wildlife);
- Benthic macroinvertebrate/insect consumption (wildlife);
- Direct exposure to sediment (benthic macroinvertebrates);
- Direct exposure to sediment (humans); and
- Other risks.

These residual risks and their associated measures of risk are summarized in Table I.20. In some cases, risk surrogates such as contaminant concentrations in fish tissue have been used because of the difficulty of quantifying direct measures of risk. When risk surrogates are used, they are compared, where possible, to risk-based target concentrations, such as those developed for fish tissue in Appendix G, fish tissue goals. Other potential residual risks (i.e., risk to fish from CPOIs in fish tissue and failure of the sediment cap) were not evaluated quantitatively but are discussed in qualitative terms.

I.3.2 FISH CONSUMPTION (HUMANS AND WILDLIFE)

The key risk drivers for fish consumption for humans and wildlife are mercury, PCBs, DDT (wildlife only), polychlorinated dibenzo-*p*-dioxin/polychlorinated dibenzofuran (PCDD/PCDFs) (humans only), and arsenic (humans only). PCBs, DDT, and PCDD/PCDFs were rarely if ever detected in lake water and are known to preferentially adsorb to particles. Bioaccumulation of these CPOIs is presumed to occur through a benthic pathway. That is, PCBs, DDT, and PCDD/PCDFs enter the food web through incidental ingestion of sediment or consumption of prey such as benthic macroinvertebrates that are directly exposed to sediment. Concentrations of PCBs, DDT, and PCDD/PCDFs in fish, therefore, are related to concentrations of these CPOIs in sediment.

Mercury behaves differently than PCBs, DDT, and PCDD/PCDFs in aquatic systems. While most of the mercury mass in Onondaga Lake is associated with sediment, mercury was also detected throughout the water column and is known to participate in a dynamic biogeochemical cycle. Of primary importance is the methylation of inorganic mercury to form methylmercury. Methylmercury production is a naturally occurring process by which inorganic mercury is transformed to the potentially toxic and bioaccumulative methylmercury. The process occurs in the sediments and hypolimnion of Onondaga Lake, where oxygen is absent. Sulfate-reducing bacteria, which are active under these conditions (i.e., they use sulfate rather than oxygen as an electron acceptor), are primarily responsible for methylmercury production in the environment. This production is a function of both the concentration of inorganic mercury available for methylation and the metabolic activity of the bacteria. Factors affecting mercury bioavailability and rates of sulfate-reduction include oxygen, sulfate/sulfide, and organic carbon. The hypolimnion is the major site of methylmercury production in Onondaga Lake, accounting for approximately half of the methylmercury entering the lake (based on the methylmercury mass balance presented in the RI report).

Unlike CPOIs that are primarily associated with sediment and enter the food web solely through the benthic pathway, mercury also enters the food web through the water column via the pelagic pathway. That is, dissolved methylmercury in the water column is accumulated by phytoplankton, which are consumed by zooplankton. Zooplankton are, in turn, consumed by planktivorous (i.e., plankton-eating) fish, which are consumed by piscivorous (i.e., fish-eating) fish. Piscivorous fish also eat fish that consume benthic organisms (i.e., benthivorous fish), so the methylmercury in piscivorous fish is derived from both water and sediment.

Estimation of methylmercury concentrations in fish under future conditions is complicated by the behavior of mercury in the environment. For example, the concentration of methylmercury in the water column is a function of numerous processes, including the rate of methylmercury production in the hypolimnion which is, in turn, controlled primarily by conditions that impact bacterial activity (i.e., dissolved oxygen concentration) and, to a lesser extent, by the concentration of inorganic mercury available for methylation. Mercury concentrations in fish are therefore controlled by methylmercury production, mercury loading to the water column (from tributaries and in-lake sources), and mercury concentration in sediment. Each of these processes will be considered in this residual risk analysis.

With the exception of the No Action Alternative, all lake-wide alternatives evaluated in Section 5 of the FS report assume upland source control, aeration (oxygenation) of the hypolimnion, and sediment remediation. Each of these components will impact CPOI concentrations in sediment and water. In this subsection, residual concentrations of CPOIs are estimated for lake water (mercury) and sediment (mercury and PCBs) based on reductions in loading from upland and in-lake sources, aeration (oxygenation), and sediment remediation. Residual concentrations of mercury and PCBs are then calculated for fish tissue and compared to target fish tissue concentrations developed in Appendix G, fish tissue goals. Residual concentrations of mercury in sediment are also compared to a bioaccumulation-based sediment quality value (BSQV) developed for Onondaga Lake, as described in Subsection I.3.2.1.2.

I.3.2.1 Methods

Residual risk related to fish consumption was estimated based on the concept of proportionality. The concept of proportionality assumes that contaminant concentrations in sediment and biota are proportional or related by a constant factor.

This concept was applied in two ways: 1) estimation of residual concentrations of mercury in water and fish based on the estimated decreases in mercury loading to Onondaga Lake and decreases in mercury concentrations in sediment resulting from remediation (i.e., proportional reduction), and 2) development of a BSQV based on a biota-sediment accumulation factor (BSAF). These methods were used, in the first case, to allow comparison of estimated residual concentrations in water and fish to surface water quality standards and target tissue concentrations, respectively, that are considered to be protective of humans and ecological receptors that consume fish and, in the second case, to provide a means of comparing residual concentrations of mercury in sediment to a mercury concentration in sediment that is considered to be protective of ecological receptors.

I.3.2.1.1 Proportional Reduction

Proportional reduction assumes that reductions in CPOI concentrations in lake water and fish tissue are proportional to reductions in CPOI loadings. In addition, reductions in fish tissue concentrations are assumed to be proportional to reduction in CPOI concentrations in sediment. Recent work in California on development of total maximum daily loads (TMDLs) for mercury has relied on this basic assumption to relate load reductions to mercury reductions in water, sediment, and fish tissue for San Francisco Bay; Cache Creek, Bear Creek, and Harley Gulch, and for other water bodies in the Central Valley Region of California (CRWQCB, 2003; CEPA, 2004a, 2004b).

USEPA mandates the development of TMDLs for water bodies that are determined to be "impaired" and therefore included on each state's 303(d) list. Impairment due to mercury is most often noted by elevated concentrations of mercury in fish tissue. TMDLs are developed to estimate the required reductions in loading to these water bodies that will result in mercury concentrations in fish tissue or other media (e.g., bird eggs, suspended solids, water) that will be protective of humans and ecological receptors. The lack of complete understanding of mercury cycling and bioaccumulation processes in the environment complicates this analysis.

To simplify matters, the TMDL reports mentioned above make the simple assumption that loading reduction will result in a proportional reduction in mercury concentrations in water, fish, sediment, and other media. This approach provides a means of quantifying the effect of load reductions based on target mercury concentrations in fish tissue. These target tissue concentrations can be determined using standard baseline human health and ecological risk assessment protocols. The assumption of proportionality reduces the relationship between mercury loading and fish tissue to a direct function of mercury mass entering the system. It simplifies complexities associated with the fact that when inorganic mercury enters a water body, it is subject to sedimentation with particles, methylation in the water column or sediment, and bioaccumulation. Each of these processes, in turn, is subject to other environmental factors such as the concentration of dissolved oxygen, the activity of sulfate-reducing bacteria, and the nature of the food web (i.e., benthic vs. pelagic).

Although much progress has been made in the understanding of mercury cycling and bioaccumulation in the environment, the ability to estimate mercury concentrations in fish tissue based on concentrations in other media (e.g., sediment, water) is limited. Therefore, the assumption of proportional reduction, while not ideal, provides a reasonable means to address this issue. The uncertainties in this approach are discussed in greater detail in Section I.3.7.

I.3.2.1.2 Biota-Sediment Accumulation Factor

Like the previous method, BSAFs are based on the premise of a constant relationship between contaminant concentration in sediment and biota. When protective levels of contaminants in tissue are known (or have been estimated such as in Appendix G, fish tissue goals), a BSAF can be used to back-calculate a protective level of contaminant in sediment. This protective level in sediment is termed a bioaccumulation-based sediment quality value (BSQV). Contaminant concentrations in sediment above the BSQV are then assumed to pose potential risks associated with fish consumption, and contaminant concentrations below the BSQV are assumed to pose no unacceptable risk to ecological receptors through fish consumption. BSAFs for mercury were developed for Onondaga Lake using the site-specific data collected on mercury concentrations in sediments and fish tissue from the lake between 1992 and 2000. These BSAFs, in conjunction with many of the conservative assumptions used in the BERA, were used to develop a BSQV for mercury for Onondaga Lake.

BSAFs were expressed as the ratio of methylmercury concentrations in fish tissue to total mercury concentrations in surface sediments. Data for fish and sediments were pooled throughout the lake to represent lake-wide averages, rather than station-specific concentrations. Measurements of mercury in fish included both methylmercury and total mercury. For measurements of total mercury, all mercury in fish tissue was assumed to be in the form of methylmercury, consistent with site-specific data showing that almost all mercury found in Onondaga Lake fish tissue was methylmercury. It was further assumed that the BSAFs accounted for all fate and transport processes, including methylation.

The piscivorous wildlife that were considered included three avian species (i.e., belted kingfisher, *Ceryle alcyon*; great blue heron, *Ardea herodias*; and osprey, *Pandion haliaetus*) and two mammalian species (i.e., mink, *Mustela vison*, and river otter, *Lutra canadensis*). These five species were also evaluated in the food web models developed for the BERA and are considered representative of the kinds of piscivorous wildlife that would be expected to be found in and around Onondaga Lake.

The size ranges of fish consumed by the five wildlife receptors were divided into the two size classes used in the BERA: small and large fish (i.e., 3-18 and 18-60 cm in total length, respectively). The 1992-2000 database for Onondaga Lake included 65 small fish and 901 large fish. The small fish were comprised primarily of banded killifish (*Fundulus diaphanus*), brook silverside (*Labidesthes sicculus*), and juveniles of the following species: bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), white perch (*Morone americana*), and gizzard shad (*Dorosoma cepedianum*). The large fish were comprised primarily of smallmouth bass (*Micropterus dolomieui*), largemouth bass (*Micropterus salmoides*), walleye (*Stizostedion vitreum*), and white perch, but also included bluegill, gizzard shad, carp (*Cyprinus carpio*), brown bullhead (*Ictalurus nebulosus*), and channel catfish (*Ictalurus punctatus*).

Methylmercury concentrations in the two size classes of prey fish were expressed on the basis of whole bodies. Because much of the Onondaga Lake database was comprised of mercury concentrations in fish fillets, a factor of 0.7 was used to convert fillet concentrations to whole-body concentrations. The conversion factor of 0.7 was also used in the BERA and is based on analysis of both fillet and whole body measurements of mercury during the remedial investigation. Also consistent with the BERA, total mercury concentrations were assumed to be equivalent to methylmercury concentrations. Therefore, both total mercury and methylmercury data were combined to form one methylmercury dataset. The mean methlymercury concentrations in whole bodies of the 65 small fish in the Onondaga Lake database was calculated as 0.27 mg/kg wet weight, whereas the mean concentration for the 901 large fish was 0.68 mg/kg wet weight. The large fishes are disproportionately represented by species that were collected for purposes of human health risk assessment (e.g., smallmouth bass). Determination of a mean concentration based on all data, without preferentially considering fish that are more likely to be consumed by wildlife, is considered a conservative approach.

The diet of all five wildlife receptors was conservatively assumed to be 100 percent fish. For the mink and river otter, which were assumed in the BERA to include 65 and 10 percent non-fish prey in their diets, respectively, small fish were used to estimate those non-fish portions of their diets in the present analysis. The dietary contributions of the two size classes of fish for each wildlife receptor were also consistent with the BERA and were as follows:

- Belted kingfisher: 100 percent small fish
- Great blue heron: 33 and 67 percent small and large fish, respectively
- Osprey: 10 and 90 percent small and large fish, respectively
- Mink: 100 percent small fish
- River otter: 40 and 60 percent small and large fish, respectively.

Concentrations of total mercury in surface sediments were estimated by calculating surface-area weighted average concentrations (SWACs) separately for two sediment exposure scenarios: the littoral zone and the entire lake. Concentrations were calculated for both sediment exposure scenarios because the relative contributions of sediments from the littoral and profundal zones of the lake to mercury in fish was uncertain. Because most fish forage in the littoral zone, it is likely that most exposure to mercury in sediments occurs in that part of the lake. However, because some fish feed in the profundal zone and because sediments in the profundal zone may contribute mercury to the hypolimnion, some exposure to mercury in sediments of the profundal zone may also occur in the lake. For the sediment exposure scenario based on the entire lake, 67 percent of the lake bottom was assumed to occur in the profundal zone, whereas 33 percent was assumed to occur in the littoral zone. These proportions reflect the actual areas occupied by the profundal and littoral zones in the lake. Based on the information described above, the SWACs for the two exposure scenarios were calculated as 3.5 mg/kg dry weight for the littoral zone and 2.9 mg/kg dry weight for the entire lake.

Using the information described above on mercury concentrations in fish tissue and sediments, BSAFs were calculated for each size class of prey fish and each of the two sediment exposure scenarios by dividing the mean methlymercury concentrations in whole bodies of the prey fish by the SWACs of total mercury in surface sediments. The mean of the two sediment scenarios was also calculated for each fish size class and used as the best estimate of the BSAF for each size class. The resulting BSAFs (which are unitless when expressed as kg sediment/kg fish tissue) were as follows:

- Littoral zone: 0.077 and 0.194 for small and large fish, respectively
- Entire lake: 0.093 and 0.235 for small and large fish, respectively
- Mean of both scenarios: 0.085 and 0.215 for small and large fish, respectively.

Two kinds of sediment target concentrations were calculated for the five wildlife receptors based on tissue target concentrations in prey fish: one based on the NOAEL for mercury and one based on the LOAEL. The NOAEL and LOAEL tissue target concentrations for the wildlife receptors were developed in Appendix G, and are as follows in mg/kg wet weight, respectively:

- Belted kingfisher: 0.011 and 0.112
- Great blue heron: 0.035 and 0.345
- Osprey: 0.032 and 0.318
- Mink: 0.009 and 0.093
- River otter: 0.014 and 0.136.

The sediment target concentrations were calculated by dividing the NOAEL- and LOAEL-based tissue target concentrations for each wildlife receptor by the BSAFs for each size class of prey fish, weighted by the estimated contribution of each prey size class to the diet of each wildlife receptor. The various NOAEL- and LOAEL-based sediment target concentrations for the five wildlife receptors were as follows in mg/kg dry weight, respectively:

- Belted kingfisher: 0.13 and 1.32
- Great blue heron: 0.20 and 2.00
- Osprey: 0.16 and 1.57
- Mink: 0.11 and 1.09
- River otter: 0.08 and 0.83.

As shown above, the LOAEL-based sediment target concentrations for the three avian receptors ranged from 1.32 to 2.00 mg/kg dry weight, whereas the LOAEL-based sediment target concentrations for the two mammalian receptors ranged from 0.83 to 1.09 mg/kg dry weight. A sediment mercury concentration of 1 mg/kg dry weight is considered protective of all piscivorous receptors, with the exception of the river otter. However, selection of a BSQV of 0.8 mg/kg dry weight is considered protective of all piscivorous wildlife receptors that use Onondaga Lake.

I.3.2.2 Application of Methods to Onondaga Lake

I.3.2.2.1 Estimated Residual Mercury Concentrations in Water Following Source Control and Aeration (Oxygenation)

External and internal source control and aeration (oxygenation) are primarily of interest for mercury in Onondaga Lake. The RI report (TAMS, 2002c) provided a detailed mercury mass balance for May through September 1992. In this section, this mass balance is used to quantify the expected reductions in loading of mercury to the water column following source control. As discussed above, the expected reduction in loading is then assumed, for purposes of residual risk analysis, to be reflected in proportional reduction in mercury concentrations in the water column.

Ongoing sources (via groundwater and tributaries) are still major contributors of total mercury and methylmercury to the lake. Methylmercury production under anoxic conditions in the hypolimnion is a major source of methylmercury to the lake. Source control therefore includes upland source control and in-lake source control. Honeywell upland sources of mercury include the LCP Bridge Street site and the Willis Avenue site, with mercury entering the lake from Ninemile Creek and groundwater, respectively. Non-Honeywell upland sources that have already experienced or will experience reductions in mercury loading include the Onondaga County Metropolitan Wastewater Treatment Plant (Metro Plant). In-lake source control is primarily focused on elimination of mercury released from the in-lake waste deposit in SMU 1 and other littoral areas. Source control and aeration (oxygenation) are described in detail in Section 4 of the FS report. The inputs (i.e., loadings) of total mercury and methylmercury to Onondaga Lake for the period May through September 1992 were developed in the RI report (TAMS, 2002c) and summarized in Section 1 of the FS report. Tables I.21 and I.22 summarize these inputs for total mercury and methylmercury, respectively.

Upland source control will reduce or eliminate total mercury and methylmercury contributions from the Honeywell-impacted tributaries and groundwater. For this analysis, source control is assumed to eliminate mercury discharge from Tributary 5A, the East Flume, and Harbor Brook. These tributaries, even with the current elevated mercury concentrations in water, are minor contributors of mercury to the lake because their flow rates are relatively low. Source control in Ninemile Creek (i.e., remediation of the LCP Bridge Street site including the West Flume, Geddes Brook, and Ninemile Creek) will greatly reduce but not eliminate mercury loading from Ninemile Creek (i.e., 1,268 g total mercury, 48.3 g methylmercury) to the lake. The background load (i.e., the load carried in upper Ninemile Creek, upstream of Honeywell influence) was not estimated in the RI report. One could assume that the load carried by Onondaga Creek (i.e., 346 g total mercury, 20.8 g methylmercury) represents background in Ninemile Creek because Onondaga Creek and Ninemile Creek have approximately the same flow rate. In this case, remediation of upland sources in Ninemile Creek would result in approximately 70 percent reduction in total mercury load and 60 percent reduction in methylmercury load from Ninemile Creek. However, the Onondaga Creek mercury load likely exceeds background due to the urban nature of its watershed; therefore, for this analysis, upland source control in Ninemile Creek was assumed to result in an 80 percent reduction in total mercury and methylmercury loads in Ninemile Creek, consistent with Appendix N, monitored natural recovery.

Another upland source of total mercury and methylmercury to Onondaga Lake in 1992 was the Metro Plant. According to the RI report (TAMS, 2002c), upgrades to the plant since 1992 have resulted in reductions in loading of total mercury and methylmercury to the lake. No data regarding load reductions were provided in the RI report so, for this analysis, a 50 percent reduction in loadings of both total mercury and methylmercury are assumed for the Metro Plant.

Two of the in-lake sources that would be controlled by remediation are littoral sediment (primarily the in-lake waste deposit [ILWD]) and methane gas ebullition from the profundal sediments. Dredging/capping of the ILWD would eliminate mercury releases from this area of lake sediment to the water column. The ILWD was estimated to contribute 2,000 to 20,000 g of total mercury to the lake during the May through September 1992 period, as shown in Table I.23. Methylmercury releases from the ILWD were not estimated in the RI report and are not considered here.

Thin-layer capping, aeration (oxygenation), and natural recovery are expected to significantly reduce mercury releases from profundal sediment, including that contributed by methane gas ebullition. Methane gas ebullition was calculated in the RI report (TAMS, 2002c) by assuming a mercury concentration in profundal sediment of 10 ppm. Natural recovery modeling considered the effect of source control on settling sediment mercury concentrations over time (Appendix N, monitored natural recovery). While the current mean mercury concentration on settling particles is 1.39 ppm, source control is expected to result in lower concentrations of mercury on settling particles (and, therefore, in surface sediment of SMU 8). The natural recovery model assumed an 80 percent reduction in mercury loading to the lake, then further assumed that this loading reduction would be reflected in a proportional reduction in the mercury concentration on settling particles. To estimate the mercury concentration in SMU 8 following monitored natural recovery, the following scenario was considered in Appendix N:

- Source control, anoxic conditions in the hypolimnion from 1992 to 2004, with mixing depth limited to 1.5 inches (4 cm); aeration from 2004 to 2014, with mixing depth extended to 4 inches (10 cm) due to increased bioturbation

The resulting mercury concentrations in surface sediment in SMU 8 was estimated to be 1.19 ppm, based on reasonable midpoint values for key variables (Appendix N, monitored natural recovery). For estimation of mercury releases to overlying water from methane gas ebullition, a residual concentration of 1.19 ppm in sediment would result in a flux of approximately 100 g (on a May through September 1992 basis).

Aeration (oxygenation) is another form of in-lake source control that primarily impacts methylmercury. This technology is expected to virtually eliminate methylmercury production in the hypolimnion of the lake. Assuming that pilot testing of aeration (oxygenation) is successful, methylmercury production in the hypolimnion will no longer be a major source of methylmercury to the epilimnion where biota reside and can accumulate methylmercury. It should be noted that even in the presence of oxygen in overlying water, mercury methylation will likely occur in anoxic sediments in the profundal zone, but the contribution to overlying water is likely small. The contribution of methylmercury from profundal sediments to overlying water is likely to be less than the current contribution from littoral sediments (Table I.22) where overlying water is currently oxygenated. The current estimate from littoral sediment primarily reflects advection of porewater resulting from groundwater moving upward through sediment to surface water in nearshore areas. There is little, if any, groundwater-induced porewater advection in profundal sediments (Appendix D, groundwater issues). In addition, the rate of methylation is positively correlated with temperature. The lower temperatures in profundal than in littoral sediments should result in lower methylation rates in profundal than in littoral sediments.

Tables I.21 and I.22 present the estimated future loadings of total mercury and methylmercury to Onondaga Lake as well as the percent reduction from current conditions following remediation of upland sources and the lake per Lake-wide Alternatives B through E. Source control is expected to result in approximately 81 to 95 percent reduction in total mercury loading to the lake, while source control and aeration (oxygenation) are expected to result in an approximately 82 percent reduction in methylmercury loading to Onondaga Lake. The range of values for total mercury reflects ranges for inputs from the ILWD before remediation. Other littoral areas may also contribute mercury to the water column; however, these inputs were not estimated in the RI report (TAMS, 2002c), and possible reductions in mercury loading from other littoral areas are not considered here. For this analysis, the relationship between surface water concentration and loading is assumed to be proportional. Therefore, estimated residual concentrations of total mercury and methylmercury in surface water were calculated assuming the reductions in loading estimated above.

Table I.23 presents the estimated residual total mercury and methylmercury concentrations in surface water, assuming reductions proportional to reductions in mass loading. Theoretically, these percent reductions could also be extrapolated to sediment; however, sediment remediation in the lake, as discussed below, will more directly impact CPOI concentrations in sediment and is thus considered independently.

I.3.2.2.2 Estimated Residual Mercury and PCB Concentrations in Sediment Following Sediment Remediation

Sediment remediation consists of a combination of dredging and capping that will result in decreased CPOI concentrations in surface sediment due to the placement of clean cap material or backfill. Sediment remediation should occur after external source control so that the cap is not recontaminated. Lake-wide Alternatives B through J address various areas of sediment within the lake. The basic difference between the alternatives is the area of sediment to be capped and the amount of sediment to be removed (i.e., dredged) prior to capping or placement of backfill.

To estimate lake-wide concentrations of CPOIs in sediment following remediation, CPOI concentrations in cap material were assumed to be equivalent to concentrations those predicted by the isolation cap model (Attachment G of Appendix H). Cap results assuming 5 percent organic carbon were used. In SMUs 6 and 7, more than one concentration was estimated. For SMU 6, concentrations generated using the lowest velocity were used; this assumes targeted dredging for cap effectiveness in this SMU. For SMU 7, concentrations generated using the lowest velocity were also used; this assumes installation of a barrier wall along the shoreline. For CPOIs that were not modeled (e.g., arsenic) or for capping in SMUs that were not modeled (i.e., SMU 5), CPOI concentrations in cap material were assumed to be equivalent to those observed in the sediment of Otisco Lake, the reference lake for the remedial investigation. This assumption is supported by the lower mercury and PCB concentrations predicted by the model as compared to Otisco Lake concentrations (with the exception of SMU 1) as presented in Table I.24. Current concentrations were assumed for littoral areas that would not be capped or backfilled. Otisco Lake concentrations were assumed for areas receiving backfill in Alternatives E, I, and J. For SMU 8, future mercury concentrations in sediment were predicted by the MNR model (Appendix N), as described previously. The concentration data used for estimation of residual concentrations are presented in Table I.24. The table includes concentrations from Otisco Lake, the isolation cap model (where applicable), and the MNR model (for SMU 8 only) for mercury and PCBs.

Mercury and PCBs were identified as the key risk drivers for fish consumption in Subsection I.3.1.2, and were evaluated quantitatively. Methylmercury was analyzed in only a few sediment samples in the lake; therefore mercury (i.e., total mercury) was used as a surrogate for methylmercury. PCDD/PCDFs, another key risk driver, could not be considered in this fashion because of the lack of appropriate spatial coverage by existing sampling stations. However, PCDD/PCDFs are co-located with elevated concentrations of mercury and PCBs (see figures in Section 5 of RI report), so sediment remediation that addresses mercury and PCBs will also address PCDD/PCDFs. Concentrations of arsenic and DDT, which were also identified as key risk drivers, were not modeled in the isolation cap model; therefore a comparison was made between current concentrations in Onondaga Lake and those in Otisco Lake.

CPOI concentrations in sediment were estimated on a spatially averaged basis. This approach, which results in a SWAC, is especially relevant for estimates of risk to fish, wildlife, and humans. Unlike benthic macroinvertebrates that reside within and are exposed to a small area of sediment, fish, wildlife, and humans integrate exposure to CPOIs over a much larger area. The SWAC approach provides the most realistic estimation of lake-wide effects based on the distribution of available sediment data. It also provides a spatially explicit expression of lake-wide CPOI concentrations that can be directly applied to describe concentration changes related to spatially specific remedial alternatives. SWACs are often used during residual risk determinations. For example, the Fox River FS report (RETEC, 2002) used SWACs calculated for each of the remedial alternatives to determine the efficacy of each alternative in lowering PCB concentrations in sediment.

Both littoral and lake-wide SWACs were calculated for pre- and post-remediation conditions. The littoral basis assumes the continued presence of an anoxic hypolimnion, so that biological activity (and exposure to CPOIs in sediment) is limited to sediment in less than 30 ft (9 m) water depth. In addition, biological activity associated with sediment is generally greatest in shallow or nearshore areas. The lake-wide basis assumes hypothetical future conditions where the water column is aerated throughout the year, thereby making the profundal sediment biologically productive. Using the SWAC approach, changes in contaminant concentrations in different SMUs affect the overall potential for exposure (both in the littoral regions and lake-wide) based on their area and the relative concentrations of the CPOIs within the SMU.

SWACs were estimated based on the 0 to 0.8 inch (2 cm) and 0 to 6 inch (15 cm) data from the 1992 and 2000 sampling events. Sampling stations were spatially located, and the lake bottom was divided into Theissen polygons based on station location (Figure I.10). Data from each station were assumed to represent the concentrations of the CPOIs for the area of the polygon associated with each station. This approach provided both a measure of CPOI concentrations (based on data from specific sampling stations) and an estimate of the area to which the concentration applied (Table I.25). Where a particular CPOI was undetected, one-half the detection limit was generally used, consistent with risk assessment guidance. For CPOIs that are sums of laboratory data (e.g., total PCBs and total PAHs), summing rules were consistent with the HHRA and RI (TAMS, 2002b and c). The capped areas for each of the lake-wide alternatives are depicted in Appendix E.

This approach to estimating average concentrations differs from that taken in the BERA and the HHRA, where all sediment observations were pooled and given equal weight for calculations. In the SWAC approach, the weighting of an observation depends on its implied area. Hence, estimates of risk based on SWACs will differ from arithmetic mean sediment concentrations (as used in the BERA).

The formula used to calculate SWACs is as follows:

$$[CPOI]_{SWAC} = \frac{\sum\left([CPOI]_n \cdot a_n\right)}{\sum a_n}$$

where the SWAC for a particular CPOI ($[CPOI]_{SWAC}$) is the sum of the CPOI concentrations in each polygon ($[CPOI]_n$) weighted by the areas of the associated polygon (a_n) and divided by total area in all polygons. The polygon areas are thus used as weighting factors when computing the littoral and lake-wide SWACs.

For the littoral area SWACs, the analysis included only the littoral SMUs (i.e., SMUs 1 through 7). For the determination of the lake-wide SWACs (assuming future aeration or oxygenation of the hypolimnion), SMU 8 was included in the analysis. For SMU 8, the natural recovery model in Appendix N, monitored natural recovery, addressed mercury only. Assuming aeration of the hypolimnion, the natural recovery model estimated a mercury concentration of 1.19 ppm in the sediment of SMU 8 following natural recovery. The concentrations of other CPOIs are also expected to decline as upland and in-lake sources are controlled. Because the littoral sediment is a source of CPOIs to the profundal sediment, future concentrations of PCBs in the surface profundal sediment were assumed to be equal to future estimated concentrations in littoral sediment.

For the assessment of risk to ecological receptors and humans that consume fish, residual SWACs for mercury and total PCBs were calculated on a littoral and lake-wide basis for current conditions and for future conditions, assuming implementation of Lake-wide Alternatives B through J. Table I.26 summarizes the SWACs before and after remediation, as well as the percent reduction for each CPOI. Based on the sediment remediation component of Lake-wide Alternatives B through J, current littoral SWACs for mercury and total PCBs are projected to decline by 82 to 93 percent and 87 to 93 percent, respectively. On a lake-wide basis, the concentrations are expected to decline 65 to 88 percent and 77 to 87 percent, respectively.

I.3.2.3 Results

For each of the proposed lake-wide alternatives, source control and aeration (oxygenation) will reduce the concentrations of total mercury and methylmercury in water, and sediment remediation will reduce the concentrations of total mercury and PCBs in sediment. The relationship between CPOI concentrations in water/sediment and fish is complex and not easily modeled, as discussed previously. For purposes of residual risk analysis, residual concentrations of CPOIs in fish tissue can be estimated by assuming a proportional relationship between CPOI concentrations in water/sediment and fish. This assumption is a simplification of the relationship but allows comparison between various remedial alternatives and a general sense of the efficacy of the alternatives in reducing residual risk.

Therefore, for residual risk analysis, the percent reduction in total mercury and methylmercury loading and concentration in lakewater is assumed to be reflected in reduction in mercury concentrations in fish tissue. If equivalent fractional reductions were achieved, the estimated residual tissue concentrations would be within the target tissue concentration range for prey fish and sport fish, as shown in Table I.27. In addition, the estimated residual concentrations of dissolved mercury in water are below the NYSDEC surface water quality standard for protection of humans and wildlife that consume fish.

For sediment remediation, the percent reduction in SWACs for mercury and PCBs are assumed to be reflected in reduction in concentrations of these CPOIs in fish tissue. If equivalent fractional reductions were achieved, estimated concentrations of mercury and PCBs in fish would be at or below the upper end of the target tissue concentration range on both a littoral and lake-wide basis (Table I.28).

Mercury SWACs in the littoral zone and on a lake-wide basis can also be compared to the BSQV (0.8 ppm) developed for Onondaga Lake. The littoral mercury SWACs (0.226 – 0.627 ppm) are below the BSQV for all LWAs, indicating that these alternatives are protective of wildlife that consume fish. On a lake-wide basis, LWAs B through I result in mercury SWACs that slightly exceed the BSQV. With the exception of Alternative J, which yielded a lake-wide SWAC of 0.342 ppm, the lake-wide SWACs (0.91-1.003 ppm) identify a potential risk for river otter; however the alternatives are protective of all other fish-consuming receptors evaluated in the BERA (i.e., mink, belted kingfisher, great blue heron, and osprey).

When compared to the BSQV, the profundal SWAC (1.19 ppm) for Alternatives B through I identifies a potential risk for river otter and mink, although the alternatives are considered protective of the avian receptors. Comparison of the profundal SWAC to the BSQV is conceptually problematic for two reasons. First, the BSQV was developed based on littoral and lake-wide mercury SWACs not on the profundal SWAC. Second, by comparing the profundal SWAC to the BSQV, one assumes that fish receive all of their mercury from profundal sediment. This assumption is highly unlikely for several reasons. From the standpoint of the fish community in Onondaga Lake, because it is a warmwater community, most species inhabit the warmer upper waters of the lake. In addition, most of the fishes in the lake are visual feeders, thereby relying on the illuminated conditions in the upper waters to locate prey. Finally, most small fish (which constitute the entire diet of mink and 40 percent of the diet of river otter) tend to inhabit the nearshore zone where they can use macrophytes and other structures as foraging areas and refuges from predation.

From the standpoint of the predators (i.e., wildlife that consume fish), most forage primarily in the littoral and/or pelagic zones, where they are adapted to forage or where their primary food source is located in sufficient abundance. For example, the belted kingfisher preys by diving from trees or shrubs along the shoreline, the great blue heron forages by wading in shallows less than a meter in depth. The mink is only a moderate swimmer and tends to hunt fish by pouncing from the shore or shallows. The osprey preys in both the littoral and pelagic region of lake. However, it does not dive and therefore is limited to fish species that use the surface waters. The river otter, while capable of diving to depths in excess of 35 feet, will tend to forage in nearshore areas and will only venture to deeper waters if littoral prey is scarce. Thus, prey from the profundal zone would likely only represent a minor fraction of any individual’s overall diet.

Therefore, since most of the fish prey is likely to be found in the littoral zone and the piscivorous wildlife found in or near Onondaga Lake are unlikely to forage in the profundal zone to any significant extent, the comparison of the BSQV to the profundal SWAC represents a constraint based on, at best, an insignificant exposure pathway. A more appropriate comparison for the BSQV is to the littoral SWAC or to a SWAC derived from some combination of littoral and profundal sediments, taking into account the relative importance of littoral and profundal sediments to fish habitat and foraging behavior of piscivorous wildlife.

The other CPOIs that contribute to risks related to fish consumption are PCDD/PCDFs, arsenic, and DDT. As discussed previously, PCDD/PCDF analysis was limited and did not permit calculation of residual SWACs. However, the concentration contour data presented in Section 5 of the RI report (TAMS, 2002c) indicate that the elevated PCDD/PCDF concentrations (e.g., those that exceed screening criteria) are located in areas of the lake that will be addressed by the lake-wide remedial alternatives. Regarding arsenic, the pre-remediation SWAC in the littoral sediment of Onondaga Lake is below the mean concentration in Otisco Lake, as shown in Table I.29. Arsenic concentrations in fish tissue from Onondaga Lake are therefore likely to reflect background concentrations and would not be reduced through sediment remediation. The situation is similar for DDT. The pre-remediation DDT SWAC in Onondaga Lake littoral sediment is below the mean concentration in Otisco Lake (Table I.29). DDT concentrations in fish tissue from Onondaga Lake are unlikely to decrease following sediment remediation because they probably already reflect background concentrations.

Implementation of Lake-wide Alternatives B through J would result in mercury and PCB concentrations in fish that are within the target concentration ranges developed to be protective of wildlife and humans that consume fish.

I.3.3 BENTHIC MACROINVERTEBRATE/INSECT CONSUMPTION (WILDLIFE)

In the BERA (TAMS, 2002a), hazard quotients for this exposure pathway were calculated using a food web model that assumes a relationship between CPOI concentrations in sediment and CPOI concentrations in benthic macroinvertebrates and insects. Total PAHs had the highest hazard quotients for wildlife that consume benthic macroinvertebrates and insects, and therefore were the focus of the residual risk analysis. Other CPOIs with mean lowest-observed-adverse-effect level (LOAEL) hazard quotients greater than 1.0 were barium, chromium, mercury, methylmercury, and selenium. Mercury, although an important risk driver for fish consumption, was relatively unimportant to the benthic macroinvertebrate/insect consumption pathway (i.e., mean LOAEL hazard quotient of 1.1) and, like the other metal CPOIs, was evaluated qualitatively.

I.3.3.1 Methods

The residual risk analysis for benthic macroinvertebrate/insect consumption was based on calculation of littoral area SWACs, consistent with the method described above for fish consumption. However, the isolation cap model did not predict concentrations of total PAHs, barium, chromium, and selenium. The sum of the concentrations of four PAHs addressed in the isolation cap model (benzo(a)pyrene, fluorene, phenanthrene, and pyrene) was compared to the concentration of total PAHs in Otisco Lake sediment. The three PAHs constituted approximately 50 percent of the total PAH concentration. Therefore, the sum of the predicted concentration of these three PAHs in each SMU was multiplied by two to estimate total PAH concentration. For SMUs where the cap model did not predict PAH concentrations, the total PAH concentration in Otisco Lake was assumed to represent the total PAH concentration in capped areas. Similarly, the cap model did not address barium, chromium, and selenium so Otisco Lake concentrations of these metals were assumed to represent their concentration in capped areas. Otisco Lake concentrations were also assumed for backfilled areas.

The estimated residual littoral SWAC for total PAHs was used in the food web models to estimate hazard quotients for ecological receptors that consume benthic macroinvertebrate and insects. The tree swallow was selected for analysis because it had the highest hazard quotient reported in the BERA, and was therefore the most sensitive receptor. The calculation of hazard quotients assumed the same toxicity reference values (TRVs) and exposures as were used in the BERA (TAMS, 2002a).

Residual risk related to other CPOIs that pose risk to wildlife through consumption of benthic macroinvertebrates and insects was addressed qualitatively by comparing the pre- and post-remediation littoral SWACs. CPOIs treated in this manner were barium, chromium, mercury, and selenium. Littoral SWACs are appropriate because current exposure to benthic macroinvertebrates and insects occurs in the littoral zone, where fish and wildlife are most active and where oxygenated conditions allow biological activity. Under future conditions, wildlife would continue to be most active in the littoral zone, and exposure is expected to be primarily through consumption of benthic macroinvertebrates and insects from littoral sediment.

I.3.3.2 Results

Table I.30 summarizes the SWACs for total PAHs before and after remediation. Based on the sediment remediation component of Lake-wide Alternatives B through J, the current littoral SWAC for total PAHs is estimated to decline by approximately 89 percent for Alternatives B through E, 92 percent for Alternatives F through I, and 99 percent for Alternative J.

Table I.31 presents the no-observed-adverse-effect-level (NOAEL) and LOAEL hazard quotients for the tree swallow calculated from the littoral SWAC for total PAHs. Following implementation of Lake-wide Alternatives B through J, mean LOAEL hazard quotients drop below 1.0, indicating the absence of any demonstrable adverse effect.

In addition to total PAHs, Table I.30 presents the pre- and post-remediation littoral SWACs in Onondaga Lake and the mean concentrations in Otisco Lake for barium, chromium, and mercury. The estimated residual SWACs for barium are approximately equal to the mean concentrations in Otisco Lake for Alternatives B through J. Chromium concentrations are estimated to be reduced by approximately 53 percent in Alternatives B through E, 57 percent in Alternatives F through I, and approximately 80 percent in Alternative J. Mercury concentrations are estimated to be reduced by approximately 82 percent in Alternatives B through D, 85 percent in Alternatives D2 and E, 86 percent in Alternatives F through H, 89 percent in Alternative I, and 93 percent in Alternative J. Mercury SWACs are assumed to represent total mercury (i.e., inorganic mercury plus methylmercury).. The estimated residual concentrations in chromium and mercury are likely to result in significantly reduced hazard quotients for relevant receptors. In the case of selenium, the current selenium SWAC in littoral sediment of Onondaga Lake is lower than in Otisco Lake (Table I.29). Selenium concentrations in sediment from Onondaga Lake are therefore likely to reflect background concentrations and would not be reduced through sediment remediation.

For total PAHs, which pose the greatest risk to receptors that consume benthic macroinvertebrates and insects, Lake-wide Alternatives B through J are estimated to result in reduction of risk to below the lowest observed adverse effects level. Exposure to metals in these prey items will also be significantly reduced.

I.3.4 DIRECT EXPOSURE TO SEDIMENT (BENTHIC MACROINVERTEBRATES)

The BERA identified sediment toxicity as a risk to benthic macroinvertebrates in Onondaga Lake and determined that benthic communities in the southern part of the lake (now SMUs 1, 2, 6, and 7) were moderately to severely impaired. The BERA also developed site-specific sediment effects concentrations (SECs) to determine concentrations of CPOIs that are potentially toxic to benthic organisms. Sediment toxicity is often the result of mixtures of contaminants, and it can be difficult to ascertain the relative importance of individual CPOIs on overall toxicity. Appendix J, sediment effects concentrations, describes an integrated index of risk to benthic macroinvertebrates that was developed as part of the feasibility study.

This integrated index, the mean probable effects concentration quotient (mean PECQ), was the basis for identifying areas and volumes of sediment to be considered for remediation. Appendix J evaluated the exposure-response relationships between mean PECQ and chironomid and amphipod mortality in the sediment toxicity tests conducted for Onondaga Lake sediment in 1992 and 2000. As discussed in Appendix J, sediments having mean PECQs greater than one to two were identified as posing potential ecological risks with respect to sediment toxicity. Both mean PECQ values of one and two were used in the FS to define areas and volumes of sediment that may require remediation.

I.3.4.1 Methods

To estimate residual risk to benthic macroinvertebrates resulting from sediment toxicity, the sediment area exceeding mean PECQ of 1 and 2 following remediation was evaluated.

I.3.4.2 Results

With the exception of the No Action Alternative (Alternative A), each of the lake-wide alternatives addresses all areas of the lake that currently exceed a mean PECQ of 2 (by capping and/or dredging) and/or the mercury probable effect concentration (PEC) of 2.2 ppm. Following remediation, the mean PECQ for surface sediment in the lake (i.e., capped areas, dredged and capped or backfilled areas, and areas not explicitly addressed by remediation) will be less than 2 for all remedial alternatives except Alternative A. Following implementation of Alternatives B through E, approximately 223 acres of 2966 acres in the lake will still exceed a mean PECQ of 1. Alternatives F through I address these additional areas of sediment that exceed a mean PECQ of 1. Although there may be localized exceedances of individual SECs, such as the effects range-low (ER-L) in areas not addressed by remediation in Alternatives B through I, these exceedances are not expected to contribute substantially to sediment toxicity. Alternative J, which uses the ER-L as a cleanup criterion, results in a vastly greater area of sediment remediation than for the other alternatives. Based on the analysis of the toxicity data used to develop the critical (threshold) values (see Appendix J), a mean PECQ of 1 was determined to be protective of benthic invertebrates and there is not expected to be a demonstrable reduction in direct toxicity with further contaminant concentration reductions. In summary, Alternatives B through E are equally and sufficiently protective of benthic macroinvertebrates. Alternatives F through I would provide an additional safety factor with respect to protection of benthic macroinvertebrates from sediment toxicity.

I.3.5 DIRECT EXPOSURE TO SEDIMENT (HUMANS)

Direct exposure to sediment was not the major risk driver for estimated risk to human health in Onondaga Lake; however, risk estimates for exposure to sediments in the south basin exceeded 1 x 10^{-5}. Hazard indices for noncarcinogenic effects, including effects related to exposure to mercury, were within acceptable risk levels for direct contact with sediments. Residual risk for carcinogenic CPOIs was therefore calculated for the south basin, assuming the implementation of sediment remediation in Alternatives B through J.

I.3.5.1 Method

The basic approach to evaluating residual risk associated with exposure to south basin sediment was to calculate SWACs for the area and apply these to the risk calculations as presented in the HHRA (TAMS, 2002b). Risk estimates were derived for recreational visitors in the most sensitive scenario (i.e., the scenario with the highest risk estimate: older children) using the same exposure assumptions and toxicity values applied in the HRHA (TAMS 2002b). The method used for the evaluation of SWACs applicable to human health was identical to that used for the fish consumption littoral evaluation, except the areas of exposure were limited to those used in the HHRA (i.e. the southern portion of the lake where water depth did not exceed an overlying water depth of 2 m). This assumption limits exposure to the shallower portions of SMUs 1, 2, 6, and 7, and the southeast corner of SMU 5 (Figure I.11; Table I.32).

The key risk drivers for sediment exposure are arsenic, PAHs (i.e., carcinogenic PAHs, with benzo[a]pyrene being the most important), arsenic, PCDD/PCDFs, and, to a lesser extent, hexachlorobenzene. Because hexachlorobenzene is an exclusively anthropogenic (i.e., created by humans) compound that is not assumed to be associated with ongoing sources (such as aerial deposition), the long-term residual concentration was assumed to be zero. SWACs were calculated for each of these CPOIs and for PCBs. The data sources for the concentrations used in the SWAC calculations are described below. In each case, current concentrations were used for areas that would not receive a cap or backfill.

PAHs

Of the key individual PAHs found to contribute to human health risk due to sediment exposure, only benzo(a)pyrene was modeled by the isolation cap model. Concentrations in Otisco Lake were assumed for the other PAHs for the purpose of SWAC calculations in capped areas. In backfilled areas (i.e., in Alternatives E, I, and J), Otisco Lake concentrations were assumed for each of the PAHs.

Arsenic

As described previously, arsenic concentrations in sediments are consistent with background concentrations in Otisco Lake and were not addressed by the isolation cap model. However, to reproduce the risk estimates derived by TAMS (2002b) for Onondaga Lake and to have a basis for comparison with those estimates, arsenic risk estimates were included in the residual risk for direct contact, and SWACs were calculated for arsenic in sediment using the mean concentration in Otisco Lake for capped and backfilled areas.

Hexachlorobenzene

Hexachlorobenzene concentrations in capped areas were predicted by the isolation cap model and these predicted concentrations were used in SWAC calculations for the residual risk analysis. Of the key individual PAHs found to contribute to human health risk due to sediment exposure, only benzo(a)pyrene was modeled by the isolation cap model. Concentrations in Otisco Lake were assumed for the other PAHs for the purpose of SWAC calculations in capped areas.

PCBs

Although PCBs are not a primary risk driver for direct exposure to sediment, they were included in the analysis because they contribute to the overall risk estimate. Concentrations of PCBs were predicted by the isolation cap model and these predicted concentrations were used in the analysis for capped areas. Otisco Lake concentrations were used for backfilled areas. PCBs were only detected in one sample in Otisco Lake, so the background concentration reflects one-half detection limits.

In addition to these CPOIs, the risk estimates included other carcinogenic CPOIs with little influence on the risk estimate (e.g., methylene chloride, dieldrin). The EPCs of carcinogenic CPOIs other than those for which SWACs were calculated (with the exception of PCDD/PCDFs) were assumed to be zero for the background calculations, and were assumed to remain the same as in the HHRA for the pre- and post-remediation estimates. This assumption is conservative because concentrations of these CPOIs (i.e., 1,4-dichlorobenzene, benzene, dieldrin, and methylene chloride) are expected to be significantly reduced through sediment remediation. Finally, for PCDD/PCDFs, a background concentration of 5.3 nanograms per kilogram (ng/kg) was applied in capped and backfilled areas. This value was identified by USEPA as representative of background concentrations in sediments in the U.S. (USEPA, 2000).

Prior to calculating residual risk estimates for Alternatives B through J, risk estimates were derived for three scenarios: HHRA Baseline, Background, and Alternative A (No Action). The HHRA Baseline scenario used the 95 upper confidence limit (UCL) value or maximum value as applied in the HHRA (TAMS, 2002b) and was calculated for comparison to the baseline risk estimates derived in the HHRA.[5] The Background scenario used background values (i.e., Otisco Lake concentrations for PAHs, arsenic, hexachlorobenzene, and PCBs; the U.S. background for PCDD/PCDFs; and zero for all other organic compounds). The Alternative A (No Action) scenario used the current SWAC for PAHs, arsenic, hexachlorobenzene, and PCBs, and used the HHRA EPCs (i.e., 95 UCL or maximum values) for all other CPOIs.

[5] In some cases the exact risk estimate could not be reproduced using the TAMS values. This is likely due to the number of significant figures available for use in calculations provided here. However, the overall total risk estimates matched in every case.

In the SWAC approach, the weighting of an observation depends on its implied area; hence risk estimates based on SWACs (as done here) are somewhat different from those derived in the HHRA (TAMS, 2002b), which were based on the 95 UCL on the mean of the pooled (i.e., not surface area-weighted) data. This difference is reflected in the Alternative A (No Action) risk estimates, which are provided to give an accurate representation of the degree of reduction related to removal of sediments relative to that related to application of the SWAC. The risk estimates for Alternative A (No Action) are slightly lower than the HHRA Baseline risk estimates (i.e., $1.5x10^{-5}$ vs. $3.5x10^{-5}$) as a result of using SWACs in the Alternative A (No Action) risk estimates (Table I.33).

For evaluation of residual risk in Alternatives B through J, SWACs were calculated as described previously for PAHs, arsenic, hexachlorobenzene, and PCBs. The U.S. background concentration was used for PCDD/PCDFs and concentrations of other CPOIs (i.e., 1,4-dichlorobenzene, benzene, dieldrin, and methylene chloride) were conservatively assumed to remain as the EPC used in the HHRA (TAMS, 2002b).

I.3.5.2 Results

Current baseline and post-remediation risk estimates for human health (i.e., based on carcinogenic risk estimates for the older child recreational visitor scenario are provided in Tables I.33 and I.34, respectively.

As indicated, the residual risk estimates are for all lake-wide alternatives are less than $1x10^{-5}$, with the highest being $2.3x10^{-6}$. For comparison, the background risk estimates ranged from was $9.3x10^{-7}$, predominantly due to arsenic and PCDD/PCDFs (Table I.33). The Alternative A (No Action) risk estimates for contact with sediments based on SWACs was $1.3x10^{-5}$, as compared to the highest HHRA baseline estimate of $3.5x10^{-5}$. This slight discrepancy results from the use of SWACs rather than the 95 UCL on the mean of pooled data, as discussed above.

Sediment remediation in Lake-wide Alternatives B through J will reduce potential risks to humans associated with direct exposure to sediment in the south basin to acceptable levels. The risk estimates range from 1.3x10-6 to 2.3x10-6 and are only slightly elevated above background. Furthermore, no individual CPOIs exceed a risk of 1×10^{-6} under Alternatives B to J.

I.3.6 OTHER RISKS

I.3.6.1 Risk to Fish from CPOIs in Fish Tissue

The BERA (TAMS, 2002a) identified potential risks in the lake for fish, based on CPOI concentrations in fish tissue that exceeded TRVs from the literature. For fish tissue, mean LOAEL hazard quotients for chromium, mercury, methylmercury, selenium, vanadium, and zinc exceeded 1.0 for some fish species.

The source of CPOIs in fish tissue is likely a combination of exposure to water, sediment, and prey such as benthic macroinvertebrates that are exposed to sediment. Evaluation of CPOI concentrations in sediment is therefore one means of evaluating the potential residual risk to fish following implementation of the remedy. As shown in Table I. 29, the littoral selenium and vanadium SWACs in Onondaga Lake prior to remediation are lower than in Otisco Lake. Selenium and vanadium concentrations in sediment from Onondaga Lake are therefore likely to reflect background concentrations and would not be reduced through sediment remediation. Table I.30 presents the pre- and post-remediation littoral SWACs in Onondaga Lake and the mean concentrations in Otisco Lake for chromium, mercury and zinc. The estimated residual SWACs for zinc is approximately equal to the mean concentrations in Otisco Lake. Chromium concentrations are estimated to be reduced by approximately 50 to 60 percent in Alternatives B through I and mercury approximately 80 percent in Alternative J. Mercury concentrations are estimated to be reduced by 85 percent by remediation approximately 80 to 90 percent in Alternatives B through J. These estimated residual concentrations are likely to result in significantly reduced CPOI concentrations in fish, to the extent that CPOI concentrations in sediment control CPOI concentrations in fish.

I.3.6.2 Risk of Sediment Cap Failure

Consideration of residual risk may account for possible sediment cap “failure” scenarios. Three types of events were considered relevant in addressing the potential for cap failure.

First, a cap could be physically injured by an extreme episodic event (i.e., an event exceeding the magnitude of the design events for which the cap armor layer was designed). It is anticipated that under this type of episodic event, only limited areas of the cap would be affected. Repair would likely include placement of additional cap or armor material over the injured area or possibly over a larger area is post-event sampling indicates spread of contamination.

The second type of event is a slump failure of the ILWD. Adequate safety factors would be incorporated into the cap design to protect against such a failure. Note that during remedial design, additional field data will be collected to support further stability evaluations. Specifically significant additional geotechnical data will be required during final design to assess ILWD stability. Borings, cores, cone penetrometer tests (CPTs), vane shear tests, and/or other in situ tests coupled with detailed laboratory tests such as strength tests, consolidation analysis, and index tests will be performed. Detailed modeling will be used with the data to determine slope stability of the ILWD. Based on these remedial design evaluations, additional engineered controls, possibly including additional removal, may need to be implemented for a cap to be stable under static and seismic conditions. However, in the unlikely event that such a failure would occur, repair could consist of removal of the slumped material, and replacement of the damaged portion of the cap or placement of additional material over the affected area or possibly over a larger area is post-event sampling indicates spread of contamination.

The third type of event is a “failure” of the chemical isolation effectiveness of the cap. As described in Section 4 and Appendix H, capping issues, the most likely cause of a failure would be the mischaracterization of physical and chemical properties of the sediment during design (e.g., a missed hotspot of high sediment contaminant concentrations). The area subject to any such mischaracterization has been assumed limited to no more than five percent of the total area capped in any SMU or possibly over a larger area is post-event sampling indicates spread of contamination. Two of the potential repair approaches include: hot spot removal and replacement of the cap or supplement of the existing cap with a new reactive cap.

The potential for these three cap "failure" modes is not considered to significantly affect the residual risk for any of the alternatives because the cap will be designed specifically to eliminate or reduce such risk and because a monitoring and repair program will be in effect to quickly detect and repair any "failure" event prior to significant impact.

The cap would be designed and constructed to ensure long-term stability. Gravel, rock, and riprap would be incorporated into the cap design as necessary to minimize propeller, wind, and current erosion or ice scour of the cap. Consistent with EPA design guidance for caps, the cap would be designed to withstand erosional forces resulting from the 100-year return interval storm event (USEPA, 2002). As discussed in Subsection 4.3, a slope stability analysis was performed on the submerged ILWD for two slope profiles in the southeast corner of Onondaga Lake using available geotechnical and other relevant data (also see Appendix H, capping issues). The results indicate adequate safety factors against a failure of the existing slope under static and seismic conditions both with and without the cap. Additional data and analysis will be completed during final design to confirm this slope stability analysis. Institutional controls, such as bans on dredging the capped area, would be implemented as necessary to help ensure the long-term integrity of the cap.

A monitoring program to confirm that the cap remains in place and effective over time would be implemented. Side scan sonar (to detect changes in surficial sediment characteristics and roughness) would be a monitoring approach for detecting a physical injury to the cap by an extreme episodic event. Side scan sonar combined with bathymetric monitoring could be used to detect a slump failure in the ILWD. Periodic core or surface sampling would be used to verify sediment cap integrity and chemical isolation. Although proper design of the cap would provide long-term effectiveness and permanence of the remedy, periodic maintenance of the cap would be required. In the unlikely event of an extreme episodic event that damages the cap and/or “failure” in isolation cap effectiveness, the monitoring and maintenance program would be used to identify cap integrity issues and make repairs, as warranted. It is anticipated that potential damage due to an extreme episodic event and/or a “failure” in isolation cap effectiveness would thereby be limited, and the effectiveness of the remedy as a whole would not be compromised.

I.3.7 UNCERTAINTIES

The calculations of residual risk are designed to be protective of human health and the environment. Uncertainties in several assumptions of the analysis, however, may result in some overestimates or underestimates of residual risk. These include the following:

- Despite an extensive database generated during the Onondaga Lake RI and the results of much research on other pristine and contaminated water bodies, mercury cycling and bioaccumulation remain extremely complex processes that are not easily modeled with any degree of certainty or precision. The assumption of proportionality between loading reduction and water column and fish tissue concentrations as well as between reductions in sediment concentrations and fish tissue concentrations is obviously a simple one. Actual reductions in water column and fish tissue concentrations may be less or greater than the concentrations estimated here. In sediments, the percent of methylmercury is typically lower at high concentrations of total mercury than it is at low concentrations of total mercury. Since the majority of mercury uptake by fish is in the form of methylmercury, it is possible that reductions in the sediment total mercury concentration will not result in a proportional reduction in fish (i.e., there may be a smaller percent mercury reduction in fish). Fish tissue sampling will be a critical component of the monitoring plan.

- Estimated reductions in mercury concentrations in water and sediment are considered independently; however, their effect on fish tissue concentrations is probably somewhat additive. That is, reductions in mercury concentrations in water will directly reduce the pelagic component of mercury in upper-level fish, while reductions in mercury concentrations in sediment will directly reduce the benthic component of mercury in upper-level fish. Therefore, reductions in loading and reductions in sediment concentrations will both help to reduce mercury concentrations in fish.

- The latest research from the Mercury Experiment to Assess Atmospheric Loadings in Canada and the United States (METAALICUS) project indicates that “new” mercury entering a water body is bioaccumulated more actively than “old” mercury that is already present in the water body (Gilmour *et al*. 2003). While it is difficult to apply these results to contaminated systems such as Onondaga Lake, mercury entering the lake from atmospheric deposition to the watershed could be considered “new” mercury, while mercury already present in sediment of Onondaga Lake is likely to be “old” mercury. In this case, mercury in atmospheric deposition to the watershed may be disproportionately responsible for elevated mercury concentrations in water and fish. If so, the future mercury concentrations in fish may be underestimated.

- The assumption of proportionality enables residual risk analysis but also drastically simplifies the relationship between mercury concentrations in fish and reductions in mercury loading and concentrations in sediment. Reductions in loading and in factors that affect mercury cycling processes (e.g., anoxia in the hypolimnion) may have greater or lesser influence on mercury concentrations in fish than estimated here.

- Aeration (oxygenation) may alter the lake ecosystem in ways that impact mercury concentrations in fish beyond the direct reduction of methylmercury concentrations in the water column. For example, aeration (oxygenation) may affect lake productivity and thereby impact biodilution. Changes in the aquatic food web, such as changes in the proportion of benthic and pelagic species or in the length of the food chain, will also impact mercury concentrations in fish. The full implications of aeration (oxygenation) are not well understood at this time.

- Concentrations of PAHs, PCBs, and PCDD/PCDFs may not decline as low as background because ongoing non-Honeywell sources may continue to contribute these compounds to the lake. However, the FS report is based on the assumption of upland source control (consistent with NYSDEC comments on the draft FS report [NYSDEC, 2003]). PCDD/PCDFs in particular may have non-point “background” sources that contribute to elevated concentrations in the lake.

In general, these uncertainties comprise three types: the uncertainty arising from an incomplete understanding of the system; the uncertainty of predicting dynamic conditions other than those measured (i.e., extrapolating beyond the range of the data); and the uncertainty of how the system will respond to remediation (particularly aeration).

I.3.8 CONCLUSIONS

Residual risks to human health and the environment following implementation of the lake-wide alternatives were estimated based on multiple lines of evidence. Together, these approaches show that Lake-wide Alternatives B through J provide varying degrees of protection and will reduce risk to humans and ecological receptors to levels that are protective of human health and the environment. These lines of evidence included estimation of the following parameters under post-remediation conditions:

- Residual concentrations of key risk drivers (mercury and PCBs) in sediment and fish tissue;
- Residual concentrations of mercury in water;
- Hazard quotients for key risk driver (i.e., PAHs) for benthic macroinvertebrate/insect consumption by wildlife;
- Area of sediment in the lake that exceed the mean PECQ2 and mean PECQ1; and
- Cancer risk estimates for human exposure to sediment in the south basin.

Where possible, CPOI concentrations in various media were compared to risk-based target concentrations and/or concentration ranges to evaluate residual risk. Risk-based targets included:

- Target fish tissue concentration ranges for mercury and PCBs developed for the FS report (Appendix G, fish tissue goals);
- NYSDEC surface water quality standards for dissolved total mercury for protection of wildlife and humans (via fish consumption);
- The BSQV for mercury

- Hazard quotient less than 1.0 for total PAHs for wildlife that consume benthic macroinvertebrates and insects;
- Mean PECQ2 and mean PECQ1 for assessment of residual sediment toxicity to benthic macroinvertebrates; and
- Cancer risk estimate of $1x10^{-6}$ for human exposure to sediment in the south basin.

Regarding risks related to fish consumption, each of these alternatives will result in reduced concentrations of total mercury and methylmercury in water and reduced concentrations of bioaccumulative CPOIs (mercury, PCBs, and PCDD/PCDFs) in fish tissue, thereby reducing risk to wildlife and humans that consume fish. Residual tissue concentrations are difficult to predict, but if one assumes that reductions in loading are proportional to reductions in water/sediment concentrations and fish tissue concentrations, then residual tissue concentrations will be within the target tissue concentration ranges developed in Appendix G, fish tissue goals, for mercury and total PCBs. Comparison of the littoral mercury SWAC to the BSQV for mercury indicates that all alternatives are protective of the fish-consuming wildlife that were modeled. Comparison of lake-wide mercury SWACs to the BSQV indicates that all alternatives, with the exception of Alternative J, result in potential residual risk to the river otter but are protective of all other fish-consuming wildlife. For mercury and PCDD/PCDFs, ongoing “background” sources may result in concentrations in fish that exceed these estimates.

Regarding risk to wildlife that consume benthic macroinvertebrates and insects, sediment remediation in these alternatives will also reduce concentrations of PAHs and other metals that accumulate in benthic macroinvertebrates and insects and pose risk to wildlife that consume these organisms. The residual risks associated with exposure to PAHs by wildlife that consume benthic macroinvertebrates and insects were estimated to be less than the LOAEL. In addition, exposure of wildlife to metals in these prey items would be significantly reduced.

Regarding risk to benthic macroinvertebrates and humans from direct sediment exposure, each of these alternatives will result in elimination of measurable risk to benthic macroinvertebrates from sediment toxicity and reduction of cancer risk estimates to levels equal to or less than $2x10^{-6}$, similar to background conditions. Alternatives F through I would provide an additional safety factor over Alternatives B through E with respect to protection of benthic macroinvertebrates from sediment toxicity.

Multiple lines of evidence were used in this residual risk analysis to estimate the risk remaining to humans and ecological receptors following implementation of Lake-wide Alternatives B through J. Together, these approaches show that Lake-wide Alternatives B through J will reduce risk to humans and ecological receptors to levels that are protective of human health and the environment.

SECTION I.4

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APPENDIX I

TABLES

TABLE I.1

SUMMARY OF REMEDIAL ALTERNATIVES

Alternative	Description	SMU	Dredge Volume (cy)	Capping Area (acres)	Volume of Capping Material (cy)	Volume of Backfill Material (cy)	Estimated Production Rate (cy/hr)	Duration of Alternative (years)
B	Cap with targeted dredging to mean PECQ2 + Hg PEC (except SMU 5)	1	0	84	776,800	0	300	3
		2	0	16	118,800	0		
		3	75,000	29	129,700	0		
		4	0	75	345,600	0		
		5	0	0	0	0		
		6	148,000	94	419,000	0		
		7	0	38	356,600	0		
		8	0	20	11,831	0		
C	Dredge/cap with recreation and habitat diversification to mean PECQ2 + Hg PEC (except SMU 5)	1	151,000	84	836,300	0	300	3
		2	169,000	16	150,220	0		
		3	75,000	29	129,700	0		
		4	0	75	345,600	0		
		5	0	0	0	0		
		6	148,000	94	419,000	0		
		7	0	38	356,600	0		
		8	0	20	11,831	0		
D	Dredge/cap with minimal armoring to mean PECQ2 + Hg PEC (except SMU 5)	1	354,000	84	707,300	0	300	3
		2	169,000	16	150,220	0		
		3	75,000	29	129,700	0		
		4	135,000	75	346,900	0		
		5	0	0	0	0		
		6	148,000	94	419,000	0		
		7	0	38	356,600	0		
		8	0	20	11,831	0		
D2	Dredge/cap to mean PECQ2 + Hg PEC	1	354,000	84	707,300	0	300	3
		2	169,000	16	150,220	0		
		3	75,000	29	129,700	0		
		4	135,000	75	346,900	0		
		5	124,000	0	178,400	0		
		6	234,000	94	419,000	0		
		7	89,000	38	517,000	0		
		8	0	20	11,831	0		

TABLE I.1 (Continued)

SUMMARY OF REMEDIAL ALTERNATIVES

Alternative	Description	SMU	Dredge Volume (cy)	Capping Area (acres)	Volume of Capping Material (cy)	Volume of Backfill Material (cy)	Estimated Production Rate (cy/hr)	Duration of Alternative (years)
E	Dredge to mean PECQ2 + Hg PEC (except SMU 5)	1	4,028,000	0	0	2,955,000	600	9
		2	533,000	0	0	146,200		
		3	381,000	0	0	141,000		
		4	2,170,000	0	0	1,885,000		
		5	0	0	0	0		
		6	2,650,000	0	0	2,104,000		
		7	1,485,000	0	0	359,300		
		8	0	20	11,831	0		
F1	Dredge/cap to mean PECQ1 + Hg PEC	1	354,000	84	707,300	0	300	4
		2	169,000	16	150,220	0		
		3	75,000	29	129,700	0		
		4	135,000	75	346,900	0		
		5	140,000	60	274,900	0		
		6	245,000	123	500,700	0		
		7	89,000	38	330,200	0		
		8	0	154	91,100	0		
F2	Dredge/cap to mean PECQ1 + Hg PEC	1	1,015,000	84	836,987	0	300	4
		2	169,000	16	150,220	0		
		3	75,000	29	129,700	0		
		4	135,000	75	346,900	0		
		5	140,000	60	274,900	0		
		6	245,000	123	500,700	0		
		7	89,000	38	330,200	0		
		8	0	154	91,100	0		
F3	Dredge/cap to mean PECQ1 + Hg PEC	1	1,566,000	84	723,300	0	600	4
		2	169,000	16	150,220	0		
		3	75,000	29	129,700	0		
		4	135,000	75	346,900	0		
		5	140,000	60	274,900	0		
		6	245,000	123	500,700	0		
		7	89,000	38	330,200	0		
		8	0	154	91,100	0		

TABLE I.1 (Continued)

SUMMARY OF REMEDIAL ALTERNATIVES

Alternative	Description	SMU	Dredge Volume (cy)	Capping Area (acres)	Volume of Capping Material (cy)	Volume of Backfill Material (cy)	Estimated Production Rate (cy/hr)	Duration of Alternative (years)
F4	Dredge/cap to mean PECQ1 + Hg PEC	1	2,094,000	84	780,787	0	600	4
		2	169,000	16	150,220	0		
		3	75,000	29	129,700	0		
		4	135,000	75	346,900	0		
		5	140,000	60	274,900	0		
		6	245,000	123	500,700	0		
		7	89,000	38	330,200	0		
		8	0	154	91,100	0		
G	Dredge/cap to mean PECQ1 + Hg PEC	1	2,637,000	84	859,378	0	600	4
		2	169,000	16	150,220	0		
		3	75,000	29	129,700	0		
		4	135,000	75	346,900	0		
		5	140,000	60	274,900	0		
		6	245,000	123	500,700	0		
		7	89,000	38	330,200	0		
		8	0	154	91,100	0		
H	Dredge /cap to mean PECQ1 + Hg PEC	1	2,637,000	84	859,378	0	600	4
		2	403,000	16	323,123	0		
		3	75,000	29	129,700	0		
		4	135,000	75	346,900	0		
		5	140,000	60	274,900	0		
		6	245,000	123	500,700	0		
		7	89,000	38	330,200	0		
		8	0	154	91,100	0		
I	Dredge/cap to mean PECQ1 + Hg PEC	1	4,028,000	0	0	2,955,000	600	10
		2	533,000	0	0	146,200		
		3	381,000	0	0	141,000		
		4	2,170,000	0	0	1,885,000		
		5	140,000	60	274,900	0		
		6	3,447,000	0	0	2,700,000		
		7	1,485,000	0	0	359,300		
		8	0	154	91,100	0		

TABLE I.1 (Continued)

SUMMARY OF REMEDIAL ALTERNATIVES

Alternative	Description	SMU	Dredge Volume (cy)	Capping Area (acres)	Volume of Capping Material (cy)	Volume of Backfill Material (cy)	Estimated Production Rate (cy/hr)	Duration of Alternative (years)
J	Dredge/cap to ERL	1	4,028,000	0	0	2,955,000	600	17
		2	1,016,000	0	0	313,000		
		3	1,427,000	0	0	800,000		
		4	3,563,000	0	0	3,000,000		
		5	610,000	349	1,689,700	0		
		6	7,309,000	0	0	5,950,000		
		7	2,168,000	0	900	1,600,000		
		8	0	1980	1,171,280	0		

TABLE I.2

CASE STUDIES IN REMEDY IMPLEMENTATION RISK

Project Name	Implementation Risks Evaluated	Conclusions\Status
Hardage Superfund Site (USEPA Region VI)	• Off-site health risks • Emissions during remediation • Fire, explosion, and personal injury	Intrusive remedy was rejected prior to implementation due to consideration of potential worker and community risks. Potential cancer risks posed by proposed intrusive remedy (greater than $1x10^{-4}$) were over 1,000 times higher than for the alternative non-intrusive remedy. Also calculated that proposed intrusive remedy posed greater risk of worker accidents and heat stress then the alternative non-intrusive remedy. US District Court found in favor of alternative remedy.
McColl Superfund Site (USEPA Region IX)	• High vapor emissions encountered • Upgrades in PPE expected	The uncertainties associated with undertaking full-scale excavation in close proximity to residences were determined to be high. Risks of an accident which could injure workers and the off-site community were high and were not offset by risk reduction that might be achieved by the proposed remedy. USEPA reversed its position and selected a non-intrusive partial solidification remedy.
PetroProcessors Superfund Site (USEPA Region VI)	• Unacceptable vapor emissions encountered	Proposed intrusive remedy was halted when vapor emissions were found to be consistently unacceptable. The vapor emissions resulted in exceedances of occupational exposure standards at the site boundary threatening off-site community health. Alternative non-intrusive remedy selected and implemented after two years of reevaluation.
Brio Refining Superfund Site (USEPA Region VI)	• Emission problems during excavation • Exceedances of short-term air standards • Emissions higher than expected • Engineering controls needed to abate emissions	USEPA issued an amended ROD for the Site which replaced the excavation and on-site incineration remedy with a containment remedy after consideration of potential worker and community risks associated with the implementation of the initially proposed remedy.
Tyson's Lagoon Superfund Site (USEPA Region III)	• Release of vapors to community	Disadvantages associated with the proposed excavation remedy included greater potential release of volatile organic vapors to the community as compared to an alternative remedy which included soil vacuum extraction. USEPA issued a revised ROD in 1988 which replaced the excavation and off-site disposal remedy with a remedy which included soil vacuum extraction.

TABLE I.2 (Continued)

CASE STUDIES IN REMEDY IMPLEMENTATION RISK

Project Name	Implementation Risks Evaluated	Conclusions\Status
Lone Pine Landfill Superfund Site (USEPA Region II)	• Potential fire and explosion • Potential hazardous vapors during excavation • Potential worker direct contact to hazardous materials • Increased potential for traffic accidents	It was concluded that excavation could change the situation from one that does not currently threaten the public to one that could cause the releases of hazardous substances, cause chemical fires, and/or explosions. The potential long-term benefits of excavation were dwarfed by the potential short-term threats and impacts. The remedy selected in the ROD issued by USEPA in 1984 specified a containment alternative which included the installation of a cap and slurry wall.
American Chemical Service Superfund Site (USEPA Region V)	• Cost effectiveness • Extra safety measures needed due to high VOC levels • Explosion hazards	In 1999 USEPA revised the ROD due to concerns regarding health and safety of Site cleanup workers and the surrounding public if widespread waste excavation were to occur since high levels of VOCs could create health hazards.
Hastings on the Hudson (NYSDEC)	• Potential for on-site worker fatalities quantified • Potential for off-site transportation fatalities quantified • Geotechnical feasibility of deep excavation	The off-site fatal transportation accident risk for the deep excavation remedy was 75 times greater then for the containment remedy. Similarly, the on-site fatal transportation accident risk for the deep excavation remedy was 100 times higher than for the containment remedy. Outcome is still pending.
Allied Paper, Inc. Portage Creek Kalamazoo River Superfund Site (USEPA Region V)	• Accidents during off-site transportation quantified • Accidents during on-site materials handling quantified • Widespread destruction of riverine habitat	Risk of at least one fatality (RLOF) were much less for bank stabilization (RLOF = 1.95×10^{-2}) and river-wide capping (RLOF = 3.79×10^{-1}) remedies then for river-wide dredging with upland confined disposal (RLOF = 8.78×10^{-1}). Expected frequency of collision related fatalities and injuries were calculated to be significantly less for alternative remedies than for river-wide dredging remedy. Outcome still pending.

TABLE I.3

SUMMARY OF REMEDY IMPLEMENTATION RISKS EVALUATED

Remedy Implementation Risks	Source of Risk	Risk Measure/Surrogate
On-Site Worker Accidents	Construction and remediation operations	Fatal and non-fatal accident rate
Transportation Accidents and Spills	Off-site transportation of sediments and import of capping backfill and construction materials	Fatal and non-fatal accident rate Presence of sensitive receptors on route
Impact of Sediment Resuspension and on Lake Water Quality	Dredging of littoral sediments	Water quality index: Volume of water exceeding NYS chronic Surface Water Quality Standards (SWQS) X duration of exceedances
Impact of Sediment Resuspension on Recovery of Profundal Sediments	Dredging of littoral sediments	Deposition rate and Hg loading to profundal zone
Impact of Dewatering Effluent on Lake Water Quality	Sediment dewatering operations	Volume of effluent discharged above NYS chronic SWQS
Air Emissions During Dredging and Materials Handling	Dredging, stabilization process, and sediment consolidation areas	Health risk and detectable odor at proximate receptors (duration and areal extent) Worker exposure relative to OSHA standards
Temporary Loss of Lake Habitat	Physical removal of benthic macro-invertebrate community and their habitat	Habitat recovery time
Quality of Life Impacts	Restricted use of areas in vicinity of Lake Local truck traffic	Time for loss of amenity Truck volumes on local roads

TABLE I.4

SUMMARY OF WORKER ACCIDENT RISK ESTIMATES – FATAL

Alternative	Mean number of fatalities
Alt. B	5.7E-02
Alt. C	7.0E-02
Alt. D	7.7E-02
Alt. D2	8.9E-02
Alt. E	4.3E-01
Alt. F1	9.4E-02
Alt. F2	1.1E-01
Alt. F3	1.2E-01
Alt. F4	1.3E-01
Alt. G	1.5E-01
Alt. H	1.5E-01
Alt. I	4.7E-01
Alt. J	8.0E-01

TABLE I.5

SUMMARY OF WORKER ACCIDENT RISK ESTIMATES – NON-FATAL

Alternative	Mean number of non-fatal injuries
Alt. B	5.9E+00
Alt. C	7.3E+00
Alt. D	8.0E+00
Alt. D2	9.3E+00
Alt. E	4.5E+01
Alt. F1	9.7E+00
Alt. F2	1.2E+01
Alt. F3	1.2E+01
Alt. F4	1.4E+01
Alt. G	1.5E+01
Alt. H	1.6E+01
Alt. I	4.9E+01
Alt. J	8.4E+01

TABLE I.6

SUMMARY OF TRANSPORTATION ACCIDENT RISK ESTIMATES – FATAL (ON-SITE CONSOLIDATION VS. OFF-SITE DISPOSAL)

Option	In-place volume (cy)	Predicted Incidence of Fatalities	
		On-site	Off-site
1	100,000	3.7E-02	6.0E-02
2	500,000	1.2E-01	2.9E-01
3	1,000,000	2.4E-01	5.7E-01
4	10,000,000	1.8E+00	2.1E+01
5	20,000,000	3.4E+00	4.1E+01

TABLE I.7

SUMMARY OF TRANSPORTATION ACCIDENT RISK ESTIMATES – NON-FATAL (ON-SITE CONSOLIDATION VS. OFF-SITE DISPOSAL)

Option	In-place volume (cy)	Predicted Incidence of Non-Fatal Injuries	
		On-site	Off-site
1	100,000	9.5E-01	1.5E+00
2	500,000	3.2E+00	7.3E+00
3	1,000,000	6.1E+00	1.5E+01
4	10,000,000	4.7E+01	5.3E+02
5	20,000,000	8.8E+01	1.1E+03

TABLE I.8

SUMMARY OF TRANSPORTATION ACCIDENT RISK ESTIMATES – FATAL (COMPARISON OF LAKE-WIDE ALTERNATIVES)

Alternative	In-place volume (cy)	Predicted incidence of fatalities
Alt. B	223,000	2.7E-01
Alt. C	543,000	3.5E-01
Alt. D	881,000	4.2E-01
Alt. D2	1,180,000	5.1E-01
Alt. E	11,247,000	2.7E+00
Alt. F1	1,207,000	5.3E-01
Alt. F2	1,868,000	7.0E-01
Alt. F3	2,419,000	7.9E-01
Alt. F4	2,947,000	9.1E-01
Alt. G	3,490,000	1.1E+00
Alt. H	3,724,000	1.1E+00
Alt. I	12,184,000	3.0E+00
Alt. J	20,121,000	5.1E+00

TABLE I.9

SUMMARY OF TRANSPORTATION ACCIDENT RISK ESTIMATES – NON-FATAL (COMPARISON OF LAKE-WIDE ALTERNATIVES)

Alternative	In-place volume (cy)	Predicted Incidence of Non-Fatal Injuries
Alt. B	223,000	7.1E+00
Alt. C	543,000	9.1E+00
Alt. D	881,000	1.1E+01
Alt. D2	1,180,000	1.3E+01
Alt. E	11,247,000	7.0E+01
Alt. F1	1,207,000	1.4E+01
Alt. F2	1,868,000	1.8E+01
Alt. F3	2,419,000	2.0E+01
Alt. F4	2,947,000	2.3E+01
Alt. G	3,490,000	2.7E+01
Alt. H	3,724,000	2.8E+01
Alt. I	12,184,000	7.7E+01
Alt. J	20,121,000	1.3E+02

TABLE I.10

RELATIVE VOLUMES OF IMPACTED SEDIMENT RESUSPENSION DURING CAPPING VS. DREDGING

Alternative	SMU	Dredge volume (cy)	Capped area (acres)	Volume of impacted sediment resuspended during capping (1/2 of 0.5%) (cy)	Volume of impacted sediment resuspended during dredging (1%) (cy)	Rcapping/ Rtotal	Rcapping/ Rtotal in dredged SMUs
B	1	0	84	169	0	0.244	0.100
	2	0	16	32	0		
	3	75,000	29	58	750		
	4	0	75	151	0		
	5	0	0	0	0		
	6	148,000	94	190	1,480		
	7	0	38	77	0		
	8	0	20	40	0		
	Total, all SMUs	223,000	356	719	2,230		
	Total, dredged SMUs	223,000	123	249	2,230		
C	1	151,000	84	169	1,510	0.117	0.077
	2	169,000	16	32	1,690		
	3	75,000	29	58	750		
	4	0	75	151	0		
	5	0	0	0	0		
	6	148,000	94	190	1,480		
	7	0	38	77	0		
	8	0	20	40	0		
	Total, all SMUs	543,000	356	718	5,430		
	Total, dredged SMUs	543,000	223	450	5,430		
D	1	354,000	84	169	3,540	0.075	0.064
	2	169,000	16	32	1,690		
	3	75,000	29	58	750		
	4	135,000	75	151	1,350		
	5	0	0	0	0		
	6	148,000	94	190	1,480		
	7	0	38	77	0		
	8	0	20	40	0		
	Total, all SMUs	881,000	356	718	8,810		
	Total, dredged SMUs	881,000	298	601	8,810		

TABLE I.10 (Continued)

RELATIVE VOLUMES OF IMPACTED SEDIMENT RESUSPENSION DURING CAPPING VS. DREDGING

Alternative	SMU	Dredge volume (cy)	Capped area (acres)	Volume of impacted sediment resuspended during capping (1/2 of 0.5%) (cy)	Volume of impacted sediment resuspended during dredging (1%) (cy)	Rcapping/ Rtotal	Rcapping/ Rtotal in dredged SMUs
D2	1	354,000	84	169	3,540	0.063	0.060
	2	169,000	16	32	1,690		
	3	75,000	29	58	750		
	4	135,000	75	151	1,350		
	5	124,000	36	73	1,400		
	6	234,000	94	190	2,340		
	7	89,000	38	77	890		
	8	0	20	40	0		
	Total, all SMUs	1,180,000	392	791	11,800		
	Total, dredged SMUs	1,180,000	372	750	11,800		
E	1	4,028,000	0	0	40,280	0.000	0.000
	2	533,000	0	0	5,330		
	3	381,000	0	0	2,630		
	4	2,170,000	0	0	21,700		
	5	0	0	0	0		
	6	2,650,000	0	0	26,500		
	7	1,485,000	0	0	14,850		
	8	0	20	40	0		
	Total, all SMUs	11,247,000	20	40	112,470		
	Total, dredged SMUs	11,247,000	0	0	112,470		
F1	1	354,000	84	169	3,540	0.088	0.066
	2	169,000	16	32	1,690		
	3	75,000	29	58	750		
	4	135,000	75	151	1,350		
	5	140,000	60	121	1,400		
	6	245,000	123	248	2,450		
	7	89,000	38	77	890		
	8	0	154	311	0		
	Total, all SMUs	1,207,000	579	1,168	12,070		
	Total, dredged SMUs	1,207,000	425	857	12,070		

TABLE I.10 (Continued)

RELATIVE VOLUMES OF IMPACTED SEDIMENT RESUSPENSION DURING CAPPING VS. DREDGING

Alternative	SMU	Dredge volume (cy)	Capped area (acres)	Volume of impacted sediment resuspended during capping (1/2 of 0.5%) (cy)	Volume of impacted sediment resuspended during dredging (1%) (cy)	Rcapping/ Rtotal	Rcapping/ Rtotal in dredged SMUs
F2	1	1,015,000	84	169	10,150	0.059	0.044
	2	169,000	16	32	1,690		
	3	75,000	29	58	750		
	4	135,000	75	151	1,350		
	5	140,000	60	121	1,400		
	6	245,000	123	248	2,450		
	7	89,000	38	77	890		
	8	0	154	311	0		
	Total, all SMUs	1,868,000	579	1,168	18,680		
	Total, dredged SMUs	1,868,000	425	857	18,680		
F3	1	1,566,000	84	169	15,660	0.046	0.034
	2	169,000	16	32	1,690		
	3	75,000	29	58	750		
	4	135,000	75	151	1,350		
	5	140,000	60	121	1,400		
	6	245,000	123	248	2,450		
	7	89,000	38	77	890		
	8	0	154	311	0		
	Total, all SMUs	2,419,000	579	1,168	24,190		
	Total, dredged SMUs	2,419,000	425	857	24,190		
F4	1	2,094,000	84	169	20,940	0.038	0.028
	2	169,000	16	32	1,690		
	3	75,000	29	58	750		
	4	135,000	75	151	1,350		
	5	140,000	60	121	1,400		
	6	245,000	123	248	2,450		
	7	89,000	38	77	890		
	8	0	154	311	0		
	Total, all SMUs	2,947,000	579	1,168	29,470		
	Total, dredged SMUs	2,947,000	425	857	29,470		

TABLE I.10 (Continued)

RELATIVE VOLUMES OF IMPACTED SEDIMENT RESUSPENSION DURING CAPPING VS. DREDGING

Alternative	SMU	Dredge volume (cy)	Capped area (acres)	Volume of impacted sediment resuspended during capping (1/2 of 0.5%) (cy)	Volume of impacted sediment resuspended during dredging (1%) (cy)	Rcapping/ Rtotal	Rcapping/ Rtotal in dredged SMUs
G	1	2,637,000	84	169	26,370	0.032	0.024
	2	169,000	16	32	1,690		
	3	75,000	29	58	750		
	4	135,000	75	151	1,350		
	5	140,000	60	121	1,400		
	6	245,000	123	248	2,450		
	7	89,000	38	77	890		
	8	0	154	311	0		
	Total, all SMUs	3,490,000	579	1,168	34,900		
	Total, dredged SMUs	3,490,000	425	857	34,900		
H	1	2,637,000	84	169	26,370	0.030	0.022
	2	403,000	16	32	4,030		
	3	75,000	29	58	750		
	4	135,000	75	151	1,350		
	5	140,000	60	121	1,400		
	6	245,000	123	248	2,450		
	7	89,000	38	77	890		
	8	0	154	311	0		
	Total, all SMUs	3,724,000	579	1,168	37,240		
	Total, dredged SMUs	3,724,000	425	857	37,240		
I	1	4,028,000	0	0	40,280	0.004	0.001
	2	533,000	0	0	5,330		
	3	381,000	0	0	3,810		
	4	2,170,000	0	0	21,700		
	5	140,000	60	121	1,400		
	6	3,447,000	0	0	34,470		
	7	1,485,000	0	0	14,850		
	8	0	154	311	0		
	Total, all SMUs	12,184,000	214	432	121,840		
	Total, dredged SMUs	12,184,000	60	121	121,840		

TABLE I.10 (Continued)

RELATIVE VOLUMES OF IMPACTED SEDIMENT RESUSPENSION DURING CAPPING VS. DREDGING

Alternative	SMU	Dredge volume (cy)	Capped area (acres)	Volume of impacted sediment resuspended during capping (1/2 of 0.5%) (cy)	Volume of impacted sediment resuspended during dredging (1%) (cy)	Rcapping/ Rtotal	Rcapping/ Rtotal in dredged SMUs
J	1	4,028,000	0	0	40,280	0.023	0.003
	2	1,016,000	0	0	10,160		
	3	1,427,000	0	0	14,270		
	4	3,563,000	0	0	35,630		
	5	610,000	349	703	6,100		
	6	7,309,000	0	0	73,090		
	7	2,168,000	0	0	21,680		
	8	0	1980	3,993	0		
	Total, all SMUs	20,121,000	2,329	4,696	201,210		
	Total, dredged SMUs	20,121,000	349	703	201,210		

Notes:

1. Half a percent of the top 6” of sediment resuspended during capping over the entire capping area. This is assumed to consist of 50% clean cap material and 50% impacted sediment material.
2. One percent of dredged sediment over the entire thickness of the cut and area dredged resuspended during dredging.
3. Rcapping/Rtotal = Volume of sediment resuspended during capping/Total volume of sediment resuspended during dredging and capping.

TABLE I.14

HEALTH BENCHMARKS AND ODOR THRESHOLDS

CPOI (VOC or SVOC)	Odor Threshold (mg/m^3)	OSHA PEL (mg/m^3)	NYS SGC (1-hr) (mg/m^3)	NYS AGC (mg/m^3)	RfC (mg/m^3)	URF Cancer Inhal Tox $(mg/m^3)^{-1}$
Benzene	1.95E+02	3.20E+00	1.30E+00	1.30E-04	3.00E-02	7.80E-03
Benzo[a]pyrene	-	-	-	-	-	1.10E+00
Chlorobenzene	6.00E+00	3.50E+02	-	-	6.00E-02	-
1,4 Dichlorobenzene	7.00E-01	-	3.00E+01	9.00E-05	8.00E-01	6.30E-03
Ethylbenzene	-	4.34E+02	5.40E+01	1.00E+00	1.00E+00	-
Fluorene	-	-	-	-	-	-
Hexachlorobenzene			-	2.2E-06	-	4.60E-01
Methyl mercury	-	-	3.00E-03	-	3.50E-04	-
Naphthalene	2.00E-01	5.24E+01	7.90E+00	3.00E-03	3.00E-03	-
Phenanthrene	-	-		2.00E-05[1]	-	5.00E-02[2]
Phenol	2.31E-01	2.00E+01	5.8E+00	4.50E-02	-	
Pyrene	-	-	-	2.00E-05[1]	-	5.00E-02[2]
Toluene	6.00E+00	7.54E+02	3.70E+01	4.00E-01	4.00E-01	-
Trichlorobenzene	-	-	3.70E+00	-	2.00E-01	
Xylene isomers (total)	2.70E+00	4.34E+02	4.30E+00	1.00E-01	-	-

Notes:
CPOI = Chemical Parameter of Interest
NYS AGC = New York State Annual Guideline Concentration
NYS SGC = New York State Short Term Guideline Concentration
OSHA PEL = Occupational Safety and Health Administration Permissible Exposure Limit
RfC = Reference Concentration
SVOC = Semivolatile Organic Compound
URF = Unit Risk Factor
VOC = Volatile Organic Compound

1 The AGC values for these chemicals are based on cancer effects and not considered in the evaluation on noncancer air risks.

2 Although pyrene and phenanthrene are considered by USEPA as Class D – not classifiable with respect to carcinogenicity, the NYS AGC values for these chemicals are based on cancer effects. An "equivalent URF" for these chemicals was therefore derived based on their AGC value and a cancer risk of 1.0E-06.

TABLE I.17

HABITAT RECOVERY INDEX

Alternative	Total Impacted area (acres)	Duration of Construction (years)	Habitat Recovery Index (acre-year)
Alt. B	356	3.00	1424
Alt. C	356	3.00	1424
Alt. D	356	3.00	1424
Alt. D2	392	3.00	1568
Alt. E	356	9.00	3560
Alt. F1	579	4.00	2895
Alt. F2	579	4.00	2895
Alt. F3	579	4.00	2895
Alt. F4	579	4.00	2895
Alt. G	579	4.00	2895
Alt. H	579	4.00	2895
Alt. I	579	10.00	6369
Alt. J	2829	17.00	50922

Notes:
1 Habitat re-colonization is expected to take one year following completion of dredging and capping activities (Niemi et al., 1990)
2 Duration of dredging and capping based on seven working months per year.
3 Impacted area is the sum of areas that are dredged and/or capped for each lake-wide alternative. If a SMU is both dredged and capped, the area of that SMU is accounted for only once in the impacted area calculation.

TABLE I.18

KEY HUMAN HEALTH RISK CONCERNS IN ONONDAGA LAKE

Medium	Human Health Risk Concerns	
	Pathways	**CPOIs**
Sediment[a]	Direct exposure	Arsenic, PAHs, PCDD/PCDFs, hexachlorobenzene
Fish Tissue	Fish consumption	Methylmercury, PCBs, PCDD/PCDFs, arsenic
Water[b]	Fish consumption	Methylmercury

Notes:

[a] Estimated cancer risks related to direct exposure were highest (i.e., exceeded 1×10^{-5}) for sediments in the south basin. Estimated cancer risk related to exposure to sediment in the north basin only exceeded 1×10^{-6} for the reasonable maximum exposure and was not further evaluated in the FS.

[b] Cancer risks related to direct exposure including incidental ingestion were estimated in the HHRA to be less than 1×10^{-6}. NYSDEC surface water quality standards protective of human health via direct exposure were occasionally exceeded for benzene, chlorobenzene, and dichlorobenzenes and were regularly exceeded for dissolved mercury (via fish consumption).

TABLE I.19
KEY ECOLOGICAL RISK CONCERNS IN ONONDAGA LAKE

Medium	Ecological Risk Concerns		
	Receptors	**Pathways**	**CPOIs[a]**
Sediment[b]	Benthic macroinvertebrates	Direct exposure	Mercury, ethylbenzene, xylenes, chlorobenzene, dichlorobenzenes, trichlorobenzenes, PAHs, total PCBs
	Wildlife	Benthic macroinvertebrates/insect consumption	PAHs, barium, chromium, mercury, methylmercury, selenium
		Fish consumption	Methylmercury, PCBs, DDT
Fish Tissue[c]	Wildlife	Fish consumption	Methylmercury, PCBs, DDT
Water[d]	Wildlife	Fish consumption	Methylmercury

Notes:

[a] Identification of CPOIs for key risk concerns focused on CPOIs contributing to sediment toxicity to benthic macroinvertebrates, CPOIs for which the mean LOAEL HQs exceeded 1.0 (for risk to wildlife), and CPOIs that exceeded surface water quality standards (for risk to aquatic organisms).

[b] Stressors of concern were noted for direct exposure. These included calcitic sediments and oncolites. Impaired benthic communities were noted in various areas of the lake.

[c] Risks (mean LOAEL HQs greater than 1.0) were also identified for fish exposed to various CPOIs (chromium, mercury, methylmercury, selenium, vanadium, zinc) by comparison of fish tissue data to literature-derived toxicity reference values.

[d] Exceedance of narrative water quality standards (turbidity and suspended solids) and presence of stressors (salinity, dissolved oxygen, ammonia, phosphorus, sulfide, chloride, low transparency) was noted in the BERA. In addition, occasional exceedances of NYSDEC surface water quality standards for barium, copper, lead, manganese, zinc, trichlorobenzenes, and bis(2-ethylhexyl)phthalate were noted in the BERA (TAMS, 2002a)

TABLE I.20

SUMMARY OF RESIDUAL RISKS EVALUATED

Residual Risk	Receptor	Risk Measure/Surrogate
Fish consumption	Humans and wildlife	Estimated residual concentration of key risk drivers (mercury and PCBs) in fish tissue
		Estimated residual concentration of mercury in sediment
		Estimated residual concentration of mercury in water
Benthic macroinvertebrate/insect consumption	Wildlife	Estimated residual hazard quotients for key risk driver (PAHs)
Direct exposure to sediment	Benthic macroinvertebrates	Area of sediment exceeding mean PECQ 2 or mean PECQ1
Direct exposure to sediment	Humans	Estimated cancer risk estimates

TABLE I.21

CURRENT AND FUTURE ESTIMATED MERCURY INPUTS TO ONONDAGA LAKE

Sources	Current Inputs (grams)	Future Estimated Inputs (grams)
Tributaries and Metro		
Ninemile Creek	1,268	254
Onondaga Creek	346	346
Metro	611	310
Harbor Brook	81	0
East Flume	53	0
Ley Creek	84	0
Tributary 5A	65	0
In-lake waste deposit	2,000 – 20,000	0
Honeywell groundwater	752	0
Background groundwater	26	26
Porewater diffusion	116	116
Ebullition	880	100
Atmospheric deposition	71	71
Total Inputs	**6,400 – 24,000[a]**	**1,200**
Percent Reduction		**81-95 percent**

Note – Inputs are presented on a May-September 1992 basis.

[a] These values were rounded from 6,355 – 24,355 grams.

TABLE I.22

CURRENT AND FUTURE ESTIMATED METHYL MERCURY INPUTS TO ONONDAGA LAKE

Inputs	Current Inputs (grams)	Future Estimated Inputs (grams)
Tributaries and Metro		
Ninemile Creek	48.5	9.7
Onondaga Creek	20.8	20.8
Metro	42.2	21.1
Harbor Brook	2.6	0
East Flume	0.9	0
Ley Creek	0.9	0
Tributary 5A	0.6	0
Honeywell groundwater [a]	68	0
Background groundwater	1	1
Porewater diffusion	25	25
Methylmercury production	230	0
Atmospheric deposition	0.2	0.2
Total Inputs	**440**	**78**
Percent Reduction		**82 percent**

Note – Inputs are presented on a May-September 1992 basis.

[a] For methylmercury, this input refers to porewater advection resulting from Honeywell groundwater moving upward through sediment to surface water in the lake.

TABLE I.23

ESTIMATED RESIDUAL CONCENTRATIONS OF TOTAL MERCURY AND METHYL MERCURY IN ONONDAGA LAKE SURFACE WATER

Inputs	Total Mercury (ng/L)		Methylmercury (ng/L)	
	Unfiltered	Dissolved	Unfiltered	Dissolved
1992 Epilimnetic average[a]	5.73	2.58	0.56	0.23
Estimated residual average[b]	0.29 – 1.1	0.13 – 0.5	0.10	0.04

Note – For comparison, the NYSDEC surface water quality standards for mercury for protection of wildlife and humans that consume fish are 2.6 and 0.7 ng/L, dissolved total mercury.

[a] Mean detected concentrations in samples from 0-9 m collected in 1992 as reported in Table G1-62 of RI report (TAMS, 2002c).

[b] Estimates assume 81-95 percent reduction in total mercury loading and 82 percent reduction in methylmercury loading.

TABLE I.24

DATA FOR ESTIMATION OF MERCURY AND PCB SWACS IN CAPPED AREAS OF ONONDAGA LAKE

DATA SOURCE/SMU	Mean Mercury Concentration (mg/kg)	Mean PCBs Concentration (mg/kg)
Otisco Lake	0.081	0.027
Isolation Cap Model[a]		
SMU 1	1.29	0.295
SMU 2	0.0057	0.00303
SMU 3	ND	ND
SMU 4	0.00998	ND
SMU 6	0.00639	0.0169
SMU 7	0.0000517	0.0101
MNR Model[b]		
SMU 8	1.19	ND

MNR – monitored natural recovery
ND – not determined
SMU – sediment management unit
SWACs – surface-area weighted average concentrations

[a] See Appendix H for additional detail. The values used here assume steady state conditions.

[b] See Appendix N for additional detail. The value used here assumes 10 years of aeration and a mixed depth of 10 cm.

TABLE I.27

CURRENT AND ESTIMATED MERCURY CONCENTRATIONS IN FISH TISSUE FOLLOWING SOURCE CONTROL

Type of Fish[a]	Mean Mercury Concentration in Fish Tissue (mg/kg)			Target Tissue Concentration Range[e] (mg/kg)
	Current[b]	After Total Mercury Source Control[c]	After Methylmercury Source Control[d]	
Prey Fish	0.22	0.01 – 0.04	0.04	0.01 – 0.3
	0.67	0.03 – 0.1	0.1	
Sport Fish	1.1	0.06 – 0.3	0.2	0.2 – 0.6

[a] Prey fish are consumed by wildlife and are evaluated on a whole body basis. Sport fish are consumed by humans and are evaluated on a fillet basis.

[b] Current concentrations for prey fish (< 18 cm and > 18 cm in length) are mean concentrations from the BERA (TAMS, 2002a). Current concentrations for sport fish (i.e., fish of edible size) are 95 percent UCL on the mean concentrations from the HHRA (TAMS, 2002b).

[c] Assumes 81 to 95 percent loading reduction of total mercury as discussed in text.

[d] Assumes 82 percent loading reduction of methylmercury as discussed in text.

[e] As determined in Appendix G, fish tissue goals.

TABLE I.29

CURRENT CONCENTRATIONS OF ARSENIC, SELENIUM, VANADIUM, AND DDT IN LITTORAL ONONDAGA LAKE SEDIMENT AND OTISCO LAKE SEDIMENT

CPOI	Pre-Remediation Littoral SWAC (mg/kg)	Otisco Lake Mean Concentration (mg/kg)
Arsenic	2.68	4.13
Selenium	0.72	0.84
Vanadium	8.7	10.8
DDT	0.0058	0.011

TABLE I.11
COMPARISON OF INCREMENTAL CONCENTRATION ESTIMATES FOR DREDGED-AREA CSTR TO WATER QUALITY CRITERIA

	Criteria for Class B and C Surface Waters						Incremental concentrations** (ug/L)	
	minimum standard		other criteria*		other criteria*			
chemical	(ug/L)	type	(ug/L)	type	(ug/L)	type	Maximum	Minimum
Benzene (total)	10	H(FC)	210	GV; A(C)	760	GV; A(A)	1.2E-02	2.0E-06
Benzo[a]pyrene (total)			0.0012	GV; H(FC)			**8.5E-03**	2.7E-05
Chlorobenzene (total)	5	A(C)	400	H(FC)			1.5E-01	4.2E-06
Sum of Dichlorobenzenes (total)	5	A(C)					2.5E-01	3.1E-05
Ethylbenzene (total)			17	GV; A(C)	150	GV; A(A)	8.1E-03	4.7E-06
Fluorene (total)			0.54	GV; A(C)	4.8	GV; A(A)	2.8E-02	1.7E-05
Hexachlorobenzenes (total)	3x10-5	H(FC)					**4.4E-03**	2.0E-06
Naphthalene (total)			13	GV; A(C)	110	GV; A(A)	2.3E-01	2.0E-05
Phenanthrene (total)			5	GV; A(C)	45	GV; A(A)	3.0E-02	3.7E-05
Phenol (total)	5	E					8.1E-03	2.1E-05
Polychlorinated biphenyls (total)	1x10-6	H(FC)	1.2x10-4	W			**7.5E-03**	**1.6E-04**
Pyrene (total)			4.6	GV; A(C)	42	GV; A(A)	2.0E-02	5.1E-05
Toluene (total)	6,000	H(FC)	100	GV; A(C)	480	GV; A(A)	2.2E-02	1.5E-06
Mercury (dissolved)***	7x10-4	H(FC)	0.77	A(C)	1.4	A(A)	**9.2E-02**	3.3E-04
Trichlorobenzenes (total)	5	A(C)					6.3E-02	1.6E-05
Xylene isomers (total)			65	GV; A(C)	590	GV; A(A)	1.4E-01	4.8E-06

Notes:

All criteria are from *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (NYSDEC, 1998)

Bold text identifies maximum and minimum concentrations that exceed a minimum standard or guidance value

* listed criteria other than the minimum standard

** maximum and minimum water column concentrations due to resuspension during dredging activities only (all SMUs and all alternatives)

*** four criteria are listed for dissolved mercury; the fourth criterion is a standard of 0.0026 (W)

Explanation of codes:

GV distinguishes Guidance Values from standards

H(FC) identifies criteria based on human consumption of fish

A(C) identifies criteria based on fish propagation

A(A) identifies criteria based on fish survival

E identifies criteria based on aesthetics

W identifies criteria based on wildlife protection

TABLE I.12
WATER QUALITY IMPACT INDEX CALCULATIONS FOR LAKE-WIDE DREDGING ALTERNATIVES

Alternative B	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	22	0	0	11	0	0	11	0
dredge volume (cy)	223,000	0	0	75,000	0	0	148,000	0
average depth during dredging (ft)	NA	NA	NA	12.8	NA	NA	3.7	NA
number of chemicals with exceedances	4	NA	NA	2	NA	NA	4	NA
average volume of large CSTR (x1000 cy)	289.58	NA	NA	227	NA	NA	62	NA
dredging effort (dredge-hours)	1,487	NA	NA	500	NA	NA	987	NA
dredging period (weeks for 2 dredges)	9	NA	NA	3.1	NA	NA	6.2	NA
WQI index (million cy-weeks)	**2.2**	NA	NA	1.4	NA	NA	0.8	NA

Alternative C	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	68	36	10	11	0	0	11	0
dredge volume (cy)	543,000	151,000	169,000	75,000	0	0	148,000	0
average depth during dredging (ft)	NA	3.7	9.7	12.8	NA	NA	3.7	NA
number of chemicals with exceedances	4	4	4	2	NA	NA	4	NA
average volume of large CSTR (x1000 cy)	660.16	215	156	227	NA	NA	62	NA
dredging effort (dredge-hours)	3,620	1,007	1,127	500	NA	NA	987	NA
dredging period (weeks for 2 dredges)	23	6.3	7.0	3.1	NA	NA	6.2	NA
WQI index (million cy-weeks)	**7.1**	2.7	2.2	1.4	NA	NA	0.8	NA

Alternative D	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	99	45	10	11	22	0	11	0
dredge volume (cy)	881,000	354,000	169,000	75,000	135,000	0	148,000	0
average depth during dredging (ft)	NA	3.1	9.7	12.8	4.5	NA	3.7	NA
number of chemicals with exceedances	4	4	4	2	3	NA	4	NA
average volume of large CSTR (x1000 cy)	826.41	221	156	227	160	NA	62	NA
dredging effort (dredge-hours)	5,873	2,360	1,127	500	900	NA	987	NA
dredging period (weeks for 2 dredges)	37	14.8	7.0	3.1	5.6	NA	6.2	NA
WQI index (million cy-weeks)	**12.7**	6.5	2.2	1.4	1.8	NA	0.8	NA

TABLE I.12 (Continued)
WATER QUALITY IMPACT INDEX CALCULATIONS FOR LAKE-WIDE DREDGING ALTERNATIVES

Alternative D2	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	149	45	10	11	22	20	28	13
dredge volume (cy)	1,180,000	354,000	169,000	75,000	135,000	124,000	234,000	89,000
average depth during dredging (ft)	NA	3.1	9.7	12.9	4.5	10.4	3.7	5.3
number of chemicals with exceedances	4	4	4	2	3	2	4	4
average volume of large CSTR (x1000 cy)	1,373.08	221	156	224	160	334	165	113
dredging effort (dredge-hours)	7,867	2,360	1,127	500	900	827	1,560	593
dredging period (weeks for 2 dredges)	49	14.8	7.0	3.1	5.6	5.2	9.8	3.7
WQI index (million cy-weeks)	**19.4**	6.5	2.2	1.4	1.8	3.5	3.2	0.8

Alternative E	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	336	84	16	29	75	0	94	38
dredge volume (cy)	11,247,000	4,028,000	533,000	381,000	2,170,000	0	2,650,000	1,485,000
average depth during dredging (ft)	NA	24.7	27.5	11.4	14.5	NA	19.3	12.9
number of chemicals with exceedances	4	3	2	2	3	NA	2	4
average volume of large CSTR (x1000 cy)	10,042.44	3,341	710	533	1,748	NA	2,919	791
dredging effort (dredge-hours)	74,980	26,853	3,553	2,540	14,467	NA	17,667	9,900
dredging period (weeks for 4 dredges)	234	83.9	11.1	7.9	45.2	NA	55.2	30.9
WQI index (million cy-weeks)	**2,228.5**	1,121.3	31.5	16.9	316.2	NA	644.7	97.9

Alternative F1	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	158	45	10	11	22	24	33	13
dredge volume (cy)	1,207,000	354,000	169,000	75,000	135,000	140,000	245,000	89,000
average depth during dredging (ft)	NA	3.1	9.7	12.9	4.5	10.4	6.2	5.3
number of chemicals with exceedances	4	4	4	2	3	2	4	4
average volume of large CSTR (x1000 cy)	1,605.07	221	156	224	160	401	330	113
dredging effort (dredge-hours)	8,047	2,360	1,127	500	900	933	1,633	593
dredging period (weeks for 2 dredges)	50	14.8	7.0	3.1	5.6	5.8	10.2	3.7
WQI index (million cy-weeks)	**24.2**	6.5	2.2	1.4	1.8	4.7	6.7	0.8

TABLE I.12 (Continued)
WATER QUALITY IMPACT INDEX CALCULATIONS FOR LAKE-WIDE DREDGING ALTERNATIVES

Alternative F2	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	176	63	10	11	22	24	33	13
dredge volume (cy)	1,868,000	1,015,000	169,000	75,000	135,000	140,000	245,000	89,000
average depth during dredging (ft)	NA	9.5	9.7	12.9	4.5	10.4	6.2	5.3
number of chemicals with exceedances	4	3	4	2	3	2	4	4
average volume of large CSTR (x1000 cy)	2,349.22	966	156	224	160	401	330	113
dredging effort (dredge-hours)	12,453	6,767	1,127	500	900	933	1,633	593
dredging period (weeks for 2 dredges)	78	42.3	7.0	3.1	5.6	5.8	10.2	3.7
WQI index (million cy-weeks)	**99.3**	81.7	2.2	1.4	1.8	4.7	6.7	0.8

Alternative F3	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	197	84	10	11	22	24	33	13
dredge volume (cy)	2,419,000	1,566,000	169,000	75,000	135,000	140,000	245,000	89,000
average depth during dredging (ft)	NA	14.0	9.7	12.9	4.5	10.4	6.2	5.3
number of chemicals with exceedances	4	3	4	2	3	2	4	4
average volume of large CSTR (x1000 cy)	3,280.92	1,897	156	224	160	401	330	113
dredging effort (dredge-hours)	16,127	10,440	1,127	500	900	933	1,633	593
dredging period (weeks for 4 dredges)	50	32.6	3.5	1.6	2.8	2.9	5.1	1.9
WQI index (million cy-weeks)	**265.2**	247.6	2.2	1.4	1.8	4.7	6.7	0.8

Alternative F4	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	197	84	10	11	22	24	33	13
dredge volume (cy)	2,947,000	2,094,000	169,000	75,000	135,000	140,000	245,000	89,000
average depth during dredging (ft)	NA	15.4	9.7	12.9	4.5	10.4	6.2	5.3
number of chemicals with exceedances	4	3	4	2	3	2	4	4
average volume of large CSTR (x1000 cy)	3,463.88	2,080	156	224	160	401	330	113
dredging effort (dredge-hours)	19,647	13,960	1,127	500	900	933	1,633	593
dredging period (weeks for 4 dredges)	61	43.6	3.5	1.6	2.8	2.9	5.1	1.9
WQI index (million cy-weeks)	**380.6**	363.0	2.2	1.4	1.8	4.7	6.7	0.8

TABLE I.12 (Continued)
WATER QUALITY IMPACT INDEX CALCULATIONS FOR LAKE-WIDE DREDGING ALTERNATIVES

Alternative G	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	197	84	10	11	22	24	33	13
dredge volume (cy)	3,490,000	2,637,000	169,000	75,000	135,000	140,000	245,000	89,000
average depth during dredging (ft)	NA	16.7	9.7	12.9	4.5	10.4	6.2	5.3
number of chemicals with exceedances	4	3	4	2	3	2	4	4
average volume of large CSTR (x1000 cy)	3,636.66	2,256	156	224	160	401	330	110
dredging effort (dredge-hours)	23,267	17,580	1,127	500	900	933	1,633	593
dredging period (weeks for 4 dredges)	73	54.9	3.5	1.6	2.8	2.9	5.1	1.9
WQI index (million cy-weeks)	**513.5**	495.8	2.2	1.4	1.8	4.7	6.7	0.8

Alternative H	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	197	84	10	11	22	24	33	13
dredge volume (cy)	3,724,000	2,637,000	403,000	75,000	135,000	140,000	245,000	89,000
average depth during dredging (ft)	NA	16.7	25.8	12.9	4.5	10.4	6.2	5.3
number of chemicals with exceedances	4	3	2	2	3	2	4	4
average volume of large CSTR (x1000 cy)	3,900.60	2,256	416	224	160	401	330	113
dredging effort (dredge-hours)	24,827	17,580	2,687	500	900	933	1,633	593
dredging period (weeks for 4 dredges)	78	54.9	8.4	1.6	2.8	2.9	5.1	1.9
WQI index (million cy-weeks)	**525.3**	495.8	14.0	1.4	1.8	4.7	6.7	0.8

Alternative I	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	389	84	16	29	75	24	123	38
dredge volume (cy)	12,184,000	4,028,000	533,000	381,000	2,170,000	140,000	3,447,000	1,485,000
average depth during dredging (ft)	NA	24.7	27.5	11.5	14.5	10.4	19.3	12.9
number of chemicals with exceedances	4	3	2	2	3	2	1	4
average volume of large CSTR (x1000 cy)	11,356.09	3,341	710	536	1,748	401	3,830	791
dredging effort (dredge-hours)	81,227	26,853	3,553	2,540	14,467	933	22,980	9,900
dredging period (weeks for 4 dredges)	254	83.9	11.1	7.9	45.2	2.9	71.8	30.9
WQI index (million cy-weeks)	**2,688.7**	1,121.3	31.5	17.0	316.2	4.7	1,100.1	97.9

TABLE I.12 (Continued)
WATER QUALITY IMPACT INDEX CALCULATIONS FOR LAKE-WIDE DREDGING ALTERNATIVES

Alternative J	**totals**	SMU 1	SMU 2	SMU 3	SMU 4	SMU 5	SMU 6	SMU 7
dredge area (acres)	608	84	34	113	75	108	156	38
dredge volume (cy)	20,121,000	4,028,000	1,016,000	1,427,000	3,563,000	610,000	7,309,000	2,168,000
average depth during dredging (ft)	NA	24.7	28.8	11.6	18.8	10.0	22.5	15.3
number of chemicals with exceedances	3	3	2	1	3	2	1	3
average volume of large CSTR (x1000 cy)	17,650.35	3,341	1,577	2,115	2,275	1,742	5,663	938
dredging effort (dredge-hours)	134,140	26,853	6,773	9,513	23,753	4,067	48,727	14,453
dredging period (weeks for 4 dredges)	419	83.9	21.2	29.7	74.2	12.7	152.3	45.2
WQI index (million cy-weeks)	**5,888.9**	1,121.3	133.5	251.5	675.4	88.6	3,449.1	169.5

TABLE I.13
Total Volumes of Effluent Generated by Alternatives

Alternative	Total Volume of Dredged Sediments (cubic yards)	Expected Effluent Volume (cubic yards)	Ratio to Volume for Alternative B
Alt. B	223,000	1,115,000	1.0
Alt. C	543,000	2,715,000	2.4
Alt. D	881,000	4,405,000	4.0
Alt. D2	1,180,000	5,900,000	5.3
Alt. E	11,247,000	56,235,000	50.4
Alt. F1	1,207,000	6,035,000	5.4
Alt. F2	1,868,000	9,340,000	8.4
Alt. F3	2,419,000	12,095,000	10.8
Alt. F4	2,947,000	14,735,000	13.2
Alt. G	3,490,000	17,450,000	15.7
Alt. H	3,724,000	18,620,000	16.7
Alt. I	12,184,000	60,920,000	54.6
Alt. J	20,121,000	100,605,000	90.2

TABLE I.15

SUMMARY OF LONGER-TERM VOLATILIZATION RISKS, BASED ON AVERAGE SEDIMENT CONCENTRATION DATA

Noncancer Hazard Index (HI)									
Alternative	**SMU 1**	**SMU 2**	**SMU 3**	**SMU 4**	**SMU 5**	**SMU 6**	**SMU 7**	**SCA**	**Mixing pad**
B	NA	NA	NE	NA	NA	NE	NA	0.01	0.7
C	NE	NE	NE	NA	NA	NE	NA	0.5	**14**
D	NE	NE	NE	NE	NA	NE	NA	0.8	**17**
D2	NE	NE	NE	NE	NE	NE	NE	0.6	**9**
E	NE	NE	NE	NE	NA	NE	NE	**1.2**	**13**
F1	NE	NE	NE	NE	NE	NE	NE	0.9	**13**
F2	NE	NE	NE	NE	NE	NE	NE	**2.6**	**28**
F3	NE	NE	NE	NE	NE	NE	NE	**3.9**	**32**
F4	NE	NE	NE	NE	NE	NE	NE	**4.1**	**30**
G	NE	NE	NE	NE	NE	NE	NE	**5.4**	**27**
H	NE	NE	NE	NE	NE	NE	NE	**5.3**	**25**
I	NE	NE	NE	NE	NE	NE	NE	**1.5**	**12**
J	1.7E-04	1.0E-04	8.2E-07	5.1E-08	2.5E-07	1.1E-05	1.2E-05	**1.4**	**8**
						Alt J sum	2.9E-04		

Cancer Risk									
Alternative	**SMU 1**	**SMU 2**	**SMU 3**	**SMU 4**	**SMU 5**	**SMU 6**	**SMU 7**	**SCA**	**Mixing pad**
B	NA	NA	NE	NA	NA	NE	NA	5.9E-10	1.6E-08
C	NE	NE	NE	NA	NA	NE	NA	5.7E-10	2.2E-08
D	NE	NE	NE	NE	NA	NE	NA	3.5E-08	8.7E-07
D2	NE	NE	NE	NE	NE	NE	NE	5.7E-08	**1.2E-06**
E	NE	NE	NE	NE	NA	NE	NE	2.4E-07	**2.8E-06**
F1	NE	NE	NE	NE	NE	NE	NE	5.8E-08	**1.2E-06**
F2	NE	NE	NE	NE	NE	NE	NE	1.8E-07	**2.0E-06**
F3	NE	NE	NE	NE	NE	NE	NE	1.7E-07	**1.4E-06**
F4	NE	NE	NE	NE	NE	NE	NE	2.3E-07	**1.6E-06**
G	NE	NE	NE	NE	NE	NE	NE	3.3E-07	**1.5E-06**
H	NE	NE	NE	NE	NE	NE	NE	3.4E-07	**1.5E-06**
I	NE	NE	NE	NE	NE	NE	NE	3.2E-07	**2.9E-06**
J	1.8E-10	7.4E-11	7.2E-12	9.9E-12	5.7E-12	2.3E-10	8.3E-11	5.0E-07	**3.4E-06**
						Alt J sum	6.0E-10		

Notes:
Estimated risks presented in this table are associated with a receptor at the point of maximum exposure
HI=hazard index is the sum of the hazard quotients (HQs) for each CPOI
NA = Not applicable (SMU not dredged)
NE = Not quantitatively evaluated

TABLE I.16

SUMMARY OF SHORT-TERM VOLATILIZATION RISKS, BASED ON AVERAGE SEDIMENT CONCENTRATION DATA

Alternative	SMU	SCA			MIXING PAD			PT OF DREDGE		
		HQ Worker	HQ-1	HQ-1 Odor	HQ Worker	HQ-1	HQ-1 Odor	HQ Worker	HQ-1	HQ-1 Odor
B	SMU3	3.1E-03	7.6E-03	1.9E-03	1.3E-01	3.2E-01	2.8E-01	NE		
	SMU6	1.4E-04	3.6E-04	1.4E-02	1.3E-02	3.6E-01	**3**			
C	SMU 1	5.2E-03	1.5E-02	2.9E-01	1.9E-01	**2.7**	**50**	NE		
	SMU 2	4.3E-03	1.9E-02	7.5E-01	4.0E-01	**2.7**	**106**			
	SMU 3	4.5E-03	1.1E-02	2.7E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU6	2.1E-04	5.2E-04	2.0E-02	1.3E-02	3.6E-01	**3**			
D	SMU 1	1.2E-02	3.0E-02	6.9E-01	3.5E-01	**3.6**	**93**	NE		
	SMU 2	5.7E-03	2.5E-02	9.9E-01	4.0E-01	**2.7**	**106**			
	SMU 3	5.9E-03	1.4E-02	3.6E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU4	1.8E-05	7.5E-05	8.9E-04	4.3E-04	**1.2**	8.9E-02			
	SMU6	2.8E-04	6.8E-04	2.6E-02	1.3E-02	3.6E-01	**3**			
D2	SMU 1	1.4E-02	3.5E-02	8.1E-01	3.5E-01	**3.6**	**93**	NE		
	SMU 2	6.7E-03	2.9E-02	**1.2**	4.0E-01	**2.7**	**106**			
	SMU 3	6.9E-03	1.7E-02	4.2E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU 4	2.1E-05	8.8E-05	1.0E-03	4.3E-04	**1.2**	8.9E-02			
	SMU 5	1.5E-05	6.2E-05	2.5E-03	6.2E-04	1.2E-01	1.6E-01			
	SMU 6	3.2E-04	7.9E-04	3.1E-02	1.3E-02	3.6E-01	**3**			
	SMU 7	4.4E-03	1.1E-02	3.2E-01	1.2E-01	**3.3**	**32**			
E	SMU1	1.2E-02	4.2E-02	9.1E-01	4.0E-01	**2.6**	**104**	NE		
	SMU2	3.8E-03	1.7E-02	6.7E-01	2.3E-01	**1.5**	**60**			
	SMU3	4.6E-03	1.1E-02	3.0E-03	8.8E-02	2.2E-01	2.0E-01			
	SMU4	1.6E-05	2.6E-04	5.4E-04	3.2E-04	**5.1**	4.7E-02			
	SMU6	1.8E-04	1.0E-03	4.1E-02	1.7E-02	2.2E-01	**4**			
	SMU7	1.4E-03	6.9E-03	2.7E-01	1.0E-01	**1.3**	**27**			
F1	SMU1	1.4E-02	3.5E-02	8.1E-01	3.5E-01	**3.6**	**93**	NE		
	SMU2	6.7E-03	2.9E-02	**1.2**	4.0E-01	**2.7**	**106**			
	SMU3	6.9E-03	1.7E-02	4.2E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU4	2.1E-05	8.8E-05	1.0E-03	4.3E-04	**1.2**	8.9E-02			
	SMU5	1.5E-05	6.2E-05	2.5E-03	6.2E-04	1.2E-01	1.6E-01			
	SMU6	4.6E-04	1.1E-03	3.2E-02	1.3E-02	4.6E-01	**3**			
	SMU7	4.4E-03	1.1E-02	3.2E-01	1.2E-01	**3.3**	**32**			
F2	SMU1	2.4E-02	7.9E-02	**1.9**	6.2E-01	**4.1**	**164**	NE		
	SMU2	8.9E-03	3.9E-02	**1.5**	4.0E-01	**2.7**	**106**			
	SMU3	9.1E-03	2.2E-02	5.6E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU4	2.8E-05	1.2E-04	1.4E-03	4.3E-04	**1.2**	8.9E-02			
	SMU5	1.9E-05	8.3E-05	3.3E-03	6.2E-04	1.2E-01	1.6E-01			
	SMU6	6.1E-04	1.5E-03	4.2E-02	1.3E-02	4.6E-01	**3**			
	SMU7	5.9E-03	1.4E-02	4.3E-01	1.2E-01	**3.3**	**32**			
F3	SMU1	2.8E-02	9.3E-02	**2.2**	6.2E-01	**4.1**	**164**	NE		
	SMU2	1.0E-02	4.6E-02	**1.8**	4.0E-01	**2.7**	**106**			
	SMU3	1.1E-02	2.6E-02	6.6E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU4	3.2E-05	1.4E-04	1.6E-03	4.3E-04	**1.2**	8.9E-02			
	SMU5	2.3E-05	9.7E-05	3.8E-03	6.2E-04	0.1	1.6E-01			
	SMU6	7.2E-04	1.8E-03	5.0E-02	1.3E-02	4.6E-01	**3**			
	SMU7	6.9E-03	1.7E-02	5.0E-01	1.2E-01	**3.3**	**32**			

TABLE I.16 (Continued)

SUMMARY OF SHORT-TERM VOLATILIZATION RISKS, BASED ON AVERAGE SEDIMENT CONCENTRATION DATA

Alternative	SMU	SCA			MIXING PAD			PT OF DREDGE		
		HQ Worker	HQ-1	HQ-1 Odor	HQ Worker	HQ-1	HQ-1 Odor	HQ Worker	HQ-1	HQ-1 Odor
F4	SMU1	2.9E-02	9.8E-02	**2.2**	5.4E-01	**3.6**	**141**	NE		
	SMU2	1.2E-02	5.2E-02	**2.0**	4.0E-01	**2.7**	**106**			
	SMU3	1.2E-02	3.0E-02	7.4E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU4	3.7E-05	1.5E-04	1.8E-03	4.3E-04	**1.2**	8.9E-02			
	SMU5	2.6E-05	1.1E-04	4.3E-03	6.2E-04	1.2E-01	1.6E-01			
	SMU6	8.1E-04	2.0E-03	5.6E-02	1.3E-02	4.6E-01	**3**			
	SMU7	7.8E-03	1.9E-02	5.6E-01	1.2E-01	**3.3**	**32**			
G	SMU1	2.4E-02	8.9E-02	**1.9**	4.5E-01	**3.0**	**118**	NE		
	SMU2	1.2E-02	5.4E-02	**2.2**	4.0E-01	**2.7**	**106**			
	SMU3	1.3E-02	3.1E-02	7.8E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU4	3.9E-05	1.6E-04	1.9E-03	4.3E-04	**1.2**	8.9E-02			
	SMU5	2.7E-05	1.2E-04	4.6E-03	6.2E-04	1.2E-01	1.6E-01			
	SMU6	8.5E-04	2.1E-03	5.9E-02	1.3E-02	4.6E-01	**3**			
	SMU7	8.2E-03	2.0E-02	6.0E-01	1.2E-01	**3.3**	**32**			
H	SMU1	2.5E-02	9.2E-02	**2.0**	4.5E-01	**3.0**	**118**	NE		
	SMU2	6.4E-03	2.8E-02	**1.1**	2.0E-01	**1.3**	**53**			
	SMU3	1.3E-02	3.2E-02	8.1E-03	1.3E-01	3.2E-01	2.8E-01			
	SMU4	4.0E-05	1.7E-04	2.0E-03	4.3E-04	**1.2**	8.9E-02			
	SMU5	2.8E-05	1.2E-04	4.7E-03	6.2E-04	1.2E-01	1.6E-01			
	SMU6	8.8E-04	2.2E-03	6.1E-02	1.3E-02	4.6E-01	**3**			
	SMU7	8.5E-03	2.1E-02	6.2E-01	1.2E-01	**3.3**	**32**			
I	SMU1	1.2E-02	4.4E-02	9.6E-01	4.0E-01	**2.6**	**104**	NE		
	SMU2	4.0E-03	1.8E-02	7.0E-01	2.3E-01	**1.5**	**60**			
	SMU3	4.8E-03	1.2E-02	3.1E-03	8.8E-02	2.2E-01	2.0E-01			
	SMU4	1.7E-05	2.7E-04	5.7E-04	3.2E-04	**5.1**	4.7E-02			
	SMU5	1.5E-05	6.6E-05	2.6E-03	6.2E-04	1.2E-01	1.6E-01			
	SMU6	1.9E-04	1.1E-03	4.3E-02	1.7E-02	2.2E-01	**4**			
	SMU7	1.5E-03	7.3E-03	2.9E-01	1.0E-01	**1.3**	**27**			
J	SMU1	1.5E-02	5.4E-02	**1.2**	4.0E-01	**2.6**	**104**	3.1E-07	3.6E-06	1.1E-04
	SMU2	5.7E-03	2.5E-02	9.9E-01	2.7E-01	**1.8**	**70**	1.2E-07	1.2E-06	4.6E-05
	SMU3	5.9E-03	1.4E-02	3.8E-03	8.8E-02	2.2E-01	2.0E-01	1.2E-07	4.2E-07	3.4E-07
	SMU4	1.8E-05	2.8E-04	6.9E-04	2.8E-04	**4.4**	4.6E-02	1.7E-10	9.8E-09	3.4E-08
	SMU5	1.9E-05	8.0E-05	3.1E-03	6.2E-04	1.2E-01	1.6E-01	5.1E-10	4.8E-09	1.9E-07
	SMU6	1.8E-04	9.9E-04	3.9E-02	1.3E-02	1.7E-01	**3**	2.0E-08	1.9E-07	7.6E-06
	SMU7	1.8E-03	8.8E-03	3.5E-01	1.0E-01	**1.3**	**27**	1.9E-08	1.8E-07	6.9E-06

Notes:
Estimated risks presented in this table are associated with a receptor at the point of maximum exposure

HQ-1 = Hazard quotient based on maximum 1-hour average concentration divided by NYS SGC; highest HQ among CPOI evaluated is presented

HQ-1 Odor = ratio of maximum 1-hour average concentration and the odor threshold; highest HQ among CPOI evaluated is presented

HQ Worker = ratio of maximum 8-hour average concentration (scaled from 1-hour max) and the OSHA PEL; highest HQ among CPOI evaluated is presented
NE = Not quantitatively evaluated

TABLE I.25

SMU STATION DESIGNATIONS AND POLYGON AREAS USED IN DERIVATION OF SWACs

SMU 1 84.4 Acres 2.85% of Total Area		SMU 2 33.8 Acres 1.14% of Total Area		SMU 3 113 Acres 3.81% of Total Area		SMU 4 74.9 Acres 2.53% of Total Area		SMU 5 486 Acres 16.4% of Total Area		SMU 6 156 Acres 5.62% of Total Area		SMU 7 37.9 Acres 1.28% of Total Area		SMU 8 1,980 Acres 66.8% of Total Area	
Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)
S14	2.49	S28	0.576	S306	9.96	S301	9.49	S100	8.35	S10	5.81	S1	1.52	S102	83.5
S15	2.49	S307	0.327	S324	5.83	S302	3.74	S101	15.7	S11	7.41	S2	1.85	S103	75.7
S20	1.62	S308	3.83	S361	10.3	S304	5.62	S104	8.16	S12	9.10	S22	4.29	S106	64.2
S21	1.30	S325	0.681	S362	7.41	S305	5.96	S105	6.75	S13	14.5	S3	2.13	S107	82.5
S29	0.91	S326	1.83	S363	4.50	S358	3.30	S108	6.53	S16	4.50	S313	0.60	S23	12.1
S309	2.92	S328	1.22	S364	11.9	S360	7.47	S109	2.21	S17	8.47	S314	1.45	S24	22.9
S310	5.69	S329	2.67	S365	6.24	S75	6.65	S110	7.35	S18	6.94	S315	3.45	S25	45.2
S311	1.81	S330	1.32	S48	9.04	S76	7.24	S111	21.6	S19	11.7	S351	0.202	S27	16.5
S312	3.39	S331	4.44	S53	2.95	S77	7.45	S112	32.6	S316	5.41	S352	2.52	S30	24.7
S338	1.49	S332	2.28	S54	1.73	S81	5.28	S113	8.64	S317	7.89	S353	5.42	S303	24.4
S340	1.65	S333	0.801	S55	0.993	S82	2.43	S26	12.2	S318	3.42	S4	4.51	S31	38.9
S341	2.63	S334	0.494	S62	12.0	S83	1.90	S34	18.5	S319	10.9	S407	4.47	S32	40.7
S342	4.19	S335	0.248	S67	8.23	S84	2.77	S356	13.0	S320	12.4	S5	5.51	S327	14.1
S343	3.87	S336	0.543	S68	14.4			S357	4.82	S321	12.9			S33	52.6
S344	9.55	S337	3.06	S74	7.38			S366	14.5	S322	8.14			S354	26.6
S345	2.04	S339	0.989					S367	8.93	S323	4.33			S355	13.3
S346	0.694	S35	1.20					S368	20.9	S6	7.50			S40	22.2
S347	3.89	S36	1.07					S369	17.4	S7	2.24			S41	27.0
S348	3.51	S37	1.63					S370	8.30	S8	4.38			S42	43.0
S349	1.11	S38	0.970					S371	27.1	S9	8.25			S43	50.5
S350	3.50	S39	0.872					S372	16.9					S44	53.4
S401	2.41	S400	0.894					S373	13.6					S49	46.4
S402	3.36	S434	0.802					S374	40.9					S50	35.6
S403	4.23	S435	0.308					S45	7.52					S51	42.9
S404	3.97	S47	0.698					S46	3.26					S52	66.0
S405	8.64							S61	31.4					S56	29.9
S406	1.11							S66	23.3					S57	29.3

TABLE I.25 (CONTINUED)
SMU STATION DESIGNATIONS AND POLYGON AREAS USED IN DERIVATION OF SWACs

SMU 1: 84.4 Acres 2.85 % Total Area		SMU 2: 33.8 Acres 1.14 % Total Area		SMU 3: 113 Acres 3.81 % Total Area		SMU 4: 74.9 Acres 2.53 % Total Area		SMU 5: 486 Acres 16.4 % Total Area		SMU 6: 156 Acres 5.62 % Total Area		SMU 7: 37.9 Acres 1.28 % Total Area		SMU 8: 1,980 Acres 66.8 % Total Area	
Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)
								S71	6.95					S58	58.8
								S72	5.38					S59	48.4
								S73	10.6					S60	42.9
								S87	14.4					S63	56.2
								S92	13.6					S64	50.6
								S93	15.1					S65	58.6
								S94	11.3					S69	74.9
								S95	7.91					S70	55.8
														S78	28.9
														S79	33.4
														S80	71.5
														S85	20.8
														S86	10.7
														S88	25.3
														S89	21.8
														S90	31.6
														S91	49.4
														S96	45.9
														S97	29.4
														S98	44.2
														S99	37.3

Note: SMU - sediment management unit
SWAC - surface area weighted average concentration

TABLE I.26

PRE-REMEDIATION SWACs, ESTIMATED RESIDUAL SWACs, AND ESTIMATED PERCENT REDUCTION IN MERCURY AND PCB CONCENTRATIONS IN SEDIMENT BASED ON LAKE-WIDE REMEDIATION

	Remedial Alternatives / CPOI Concentration mg/kg Dry Weight)						
	A	B - D	D2	E	F1 - H	I	J
Lake-Wide Basis							
Mercury							
Pre-Remediation SWAC	2.91	2.91	2.91	2.91	2.91	2.91	2.91
Estimated Residual SWAC	2.91	1.00	0.97	0.97	0.96	0.92	0.34
Estimated Percent Reduction	0	65	67	67	67	68	88
Total PCBs							
Pre-Remediation SWAC	0.201	0.201	0.201	0.201	0.201	0.201	0.201
Estimated Residual SWAC	0.201	0.047	0.047	0.052	0.027	0.033	0.025
Estimated Percent Reduction	0	77	77	74	87	84	87
Littoral Basis							
Mercury							
Pre-Remediation SWAC	3.49	3.49	3.49	3.49	3.49	3.49	3.49
Estimated Residual SWAC	3.49	0.63	0.53	0.53	0.48	0.38	0.23
Estimated Percent Reduction	0	82	85	85	86	89	93
Total PCBs							
Pre-Remediation SWAC	0.367	0.367	0.367	0.367	0.367	0.367	0.367
Estimated Residual SWAC	0.367	0.047	0.047	0.052	0.027	0.033	0.025
Estimated Percent Reduction	0	87	87	86	93	91	93

Note:

Concentrations in capped areas following remediation are assumed to be equivalent to concentrations measured in Otisco Lake.

Residual concentrations of mercury in SMU 8 were estimated by the natural recovery model as described in the text. Residual concentrations of PCBs in SMU 8 were assumed to be equivalent to residual concentrations in the littoral zone.

TABLE I.28
CURRENT AND ESTIMATED MERCURY AND PCB CONCENTRATIONS IN FISH TISSUE FOLLOWING SEDIMENT REMEDIATION

		Remedial Alternatives / CPOI Concentration mg/kg Dry Weight)							Target Tissue Concentration Range (mg/kg ww)
		A	B - D	D2	E	F1 - H	I	J	
Lake-Wide Basis									
Mercury									
Estimated Percent Reduction		0	65	67	67	67	68	88	
Estimated Residual Concentration in Prey Fish (mg/kg ww)	<18 cm length	0.22	0.08	0.07	0.07	0.07	0.07	0.03	0.01 - 0.3
	>18 cm length	0.67	0.23	0.22	0.22	0.22	0.21	0.08	0.01 - 0.3
Estimated Residual Concentration in Sport Fish (mg/kg ww)		1.1	0.38	0.37	0.37	0.36	0.35	0.13	0.2 - 0.6
Total PCBs									
Estimated Percent Reduction		0	77	77	74	87	84	87	
Estimated Residual Concentration in Prey Fish (mg/kg ww)	<18 cm length	0.98	0.23	0.23	0.25	0.13	0.16	0.12	0.02 - 9.6
	>18 cm length	1.6	0.36	0.37	0.41	0.21	0.26	0.20	0.02 - 9.6
Estimated Residual Concentration in Sport Fish (mg/kg ww)		0.9	0.21	0.21	0.23	0.12	0.15	0.11	0.003 - 0.2
Littoral Basis									
Mercury									
Estimated Percent Reduction		0	82	85	85	86	89	93	
Estimated Residual Concentration in Prey Fish (mg/kg ww)	<18 cm length	0.22	0.04	0.03	0.03	0.03	0.02	0.01	0.01 - 0.3
	>18 cm length	0.67	0.12	0.10	0.10	0.09	0.07	0.04	0.01 - 0.3
Estimated Residual Concentration in Sport Fish (mg/kg ww)		1.1	0.20	0.17	0.17	0.15	0.12	0.07	0.2 - 0.6
Total PCBs									
Estimated Percent Reduction		0	87	87	86	93	91	93	
Estimated Residual Concentration in Prey Fish (mg/kg ww)	<18 cm length	0.98	0.12	0.13	0.14	0.07	0.09	0.07	0.02 - 9.6
	>18 cm length	1.6	0.20	0.20	0.22	0.12	0.14	0.11	0.02 - 9.6
Estimated Residual Concentration in Sport Fish (mg/kg ww)		0.9	0.11	0.12	0.13	0.07	0.08	0.06	0.003 - 0.2

Notes:
Prey fish are consumed by wildlife and are evaluated on a whole body basis. Sport fish are consumed by humans and are evaluated on a fillet basis.
Current concentrations for prey fish (< 18 cm and > 18 cm in length) are mean concentrations from the BERA (TAMS, 2002a). Current concentrations for sport fish (i.e., fish of edible size) are 95 percent UCL on the mean concentrations from the HHRA (TAMS, 2002b).
Target tissue concentration ranges as determined in Appendix G, fish tissue goals

TABLE I.30

RESIDUAL LITTORAL SWACs FOR BARIUM, CHROMIUM, MERCURY, ZINC, AND TOTAL PAHs

	Remedial Alternatives / CPOI Concentration mg/kg Dry Weight)							Otisco Lake Mean Concentration
CPOI	A	B - D	D2	E	F - H	I	J	(mg/kg dry weight)
Barium	184	107	107	107	107	107	102	102
Chromium	69	33	32	33	30	29	14	11
Mercury	3.49	0.63	0.53	0.53	0.48	0.38	0.23	0.08
Zinc	90	59	58	59	54	54	49	52
Total PAHs	28.99	3.09	3.03	3.15	2.23	2.29	0.40	0.36

TABLE I.31
ESTIMATED TOTAL PAHs HAZARD QUOTIENTS FOR TREE SWALLOWS THAT CONSUME BENTHIC MACROINVERTEBRATES/INSECTS

	Remedial Alternatives / CPOI Concentration mg/kg Dry Weight)						
Risk Parameter	A	B - D	D2	E	F2 - H	I	J
Total PAHs in Sediment (mg/kd DW)	90.054	58.712	57.607	58.712	54.031	54.166	49.426
Total PAHs in Food (mg/kg DW)	49.530	32.292	31.684	32.292	29.717	29.791	27.184
Total PAHs Exposure (mg/kg-day)	6.698	0.775	0.746	0.775	0.530	0.534	0.106
NOAEL HQ	46.840	5.417	5.219	5.417	3.704	3.735	0.740
LOAEL HQ	4.684	0.542	0.522	0.542	0.370	0.373	0.074

Boxed entries indicate hazard quotients greater than 1.0.
Exposure assumptions are consistent with the BERA (TAMS 2002a).

TABLE I.32
SMU STATION DESIGNATIONS AND POLYGON AREAS USED IN THE EVALUATION OF HUMAN HEALTH EXPOSURE

SMU 1 23% of Wading Exposure Area		SMU 2 6% of Wading Exposure Area		SMU 5 15% of Wading Exposure Area		SMU 6 32% of Wading Exposure Area		SMU 7 25% of Wading Exposure Area	
Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)	Station	Polygon Area (acres)
S14	2.49	S28	0.213	S26	11.0	S10	4.52	S1	2.31
S20	1.62	S307	0.327	S34	7.73	S11	5.46	S2	3.41
S21	1.30	S325	0.426	S366	4.59	S13	10.2	S3	2.97
S309	0.818	S328	1.22	S367	2.30	S16	4.50	S313	0.364
S310	1.31	S329	1.26	S45	2.46	S17	8.40	S314	2.09
S311	1.81	S330	1.30	S46	3.26	S18	2.25	S351	0.0409
S312	2.54	S331	0.366			S316	2.50	S352	6.36
S338	0.556	S332	0.0144			S318	2.6	S353	29.3
S340	1.65	S333	0.655			S319	0.570	S5	5.13
S341	2.63	S334	0.252			S321	12.7		
S342	0.791	S335	0.189			S322	3.98		
S343	3.87	S336	0.429			S323	0.0625		
S344	0.374	S339	0.400			S6	7.50		
S345	2.04	S35	1.07			S7	1.60		
S346	0.694	S36	1.072						
S347	3.73	S37	1.024						
S348	3.51	S38	0.064						
S349	1.11	S400	0.115						
S350	3.50	S434	0.802						
S402	3.20	S435	0.308						
S403	4.02	S47	0.373						
S404	2.45								
S406	1.11								

Notes: SMU - sediment management unit
SWAC - surface-area weighted average concentration

Polygons listed are entirely or partially within the 2-m water depth contour line. When polygons were only partially within the 2-m contour line, only the area of the polygon within the contour line (i.e., not the entire polygon) was considered.

TABLE I.33
RISK ESTIMATES FOR CONTACT WITH SOUTH BASIN SEDIMENTS FOR RECREATIONAL VISITORS: CHILDREN (AGES 6-18) - HHRA BASELINE, BACKGROUND, AND ALTERNATIVE A (NO ACTION)

					HHRA Baseline[a]		Background[b]		Alternative A (No Action)[b]	
Exposure Route	Chemical of Concern	Dermal Absorption Factor[a]	Intake (Cancer)	Cancer Slope Factor[a] (mg/kg-day)$^{-1}$	Medium EPC Value[a] (mg/kg)	Cancer Risk	Medium EPC Value (mg/kg)	Cancer Risk	Medium EPC Value (mg/kg)	Cancer Risk
Ingestion	**Metals and Organometallic Compounds**									
	Arsenic	--	1.9E-7	1.5E+0	12.4	2.8E-7	4.1	9.5E-8	3.9	9.0E-8
	Organic Compounds									
	1,4-Dichlorobenzene	--	9.6E-7	2.4E-2	63	2.3E-8	0	0	63	2.3E-8
	Benzene	--	9.4E-7	5.5E-2	61	5.2E-8	0	0	61	5.2E-8
	Dieldrin	--	1.3E-10	1.6E+1	0.0087	2.1E-9	0	0	0.0087	2.1E-9
	Hexachlorobenzene	--	1.0E-7	1.6E+0	6.7	1.6E-7	0.040	9.7E-10	0.53	1.3E-8
	Methylene chloride	--	1.3E-7	7.5E-3	8.5	9.7E-10	0	0	8.50	9.7E-10
	PAHs									
	Benz[a]anthracene	--	1.5E-7	7.3E-1	9.8	1.1E-7	0.057	6.4E-10	1.85	2.1E-8
	Benzo[a]pyrene	--	1.1E-7	7.3E+0	7.4	8.3E-7	0.062	6.9E-9	1.71	1.9E-7
	Benzo[b]fluoranthene	--	1.5E-7	7.3E-1	9.8	1.1E-7	0.059	6.6E-10	3.55	4.0E-8
	Benzo[k]fluoranthene	--	5.4E-8	7.3E-2	3.6	4.0E-9	0.058	6.5E-11	1.39	1.6E-9
	Chrysene	--	1.5E-7	7.3E-3	9.6	1.1E-9	0.066	7.3E-12	1.79	2.0E-10
	Dibenz[a,h]anthracene	--	2.5E-8	7.3E+0	1.6	1.8E-7	0.058	6.5E-9	0.71	7.9E-8
	Indeno[1,2,3-cd]pyrene	--	5.8E-8	7.3E-1	3.8	4.2E-8	0.056	6.2E-10	0.98	1.1E-8
	PCBs total	--	1.6E-8	2.0E+0	1.1	3.2E-8	0.051	1.6E-9	0.44	1.3E-8
	PCDD/F TEQ	--	5.8E-12	1.5E+5	0.00038	8.6E-7	0.0000053	1.2E-8	0.00038	8.6E-7
					Total Ingestion:	2.7E-6	Total Ingestion:	1.2E-7	Total Ingestion:	1.4E-6
Dermal	**Metals and Organometallic Compounds**									
	Arsenic	0.03	8.3E-7	1.5E+0	12.4	1.2E-6	4.1	4.1E-7	3.9	4.0E-7
	Organic Compounds									
	1,4-Dichlorobenzene	0.10	1.4E-5	2.4E-2	63	3.4E-7	0	0	63	3.4E-7
	Hexachlorobenzene	0.10	1.5E-6	1.6E+0	6.7	2.4E-6	0.040	1.4E-8	0.53	1.9E-7
	PAHs									
	Benz[a]anthracene	0.13	2.8E-6	7.3E-1	9.8	2.1E-6	0.057	1.2E-8	1.85	3.9E-7
	Benzo[a]pyrene	0.13	2.1E-6	7.3E+0	7.4	1.6E-5	0.062	1.3E-7	1.71	3.6E-6
	Benzo[b]fluoranthene	0.13	2.8E-6	7.3E-1	9.8	2.1E-6	0.059	1.3E-8	3.55	7.5E-7
	Benzo[k]fluoranthene	0.13	1.0E-6	7.3E-2	3.6	7.5E-8	0.058	1.2E-9	1.39	3.0E-8
	Chrysene	0.13	2.8E-6	7.3E-3	9.6	2.0E-8	0.066	1.4E-10	1.79	3.8E-9
	Dibenz[a,h]anthracene	0.13	4.7E-7	7.3E+0	1.6	3.4E-6	0.058	1.2E-7	0.71	1.5E-6
	Indeno[1,2,3-cd]pyrene	0.13	1.1E-6	7.3E-1	3.8	8.0E-7	0.056	1.2E-8	0.98	2.1E-7
	PCBs total	0.14	3.3E-7	2.0E+0	1.1	6.6E-7	0.051	3.2E-8	0.44	2.7E-7
	PCDD/F TEQ	0.03	2.5E-11	1.5E+5	0.00038	3.8E-6	0.0000053	5.3E-8	0.00038	3.8E-6
					Total Dermal:	3.3E-5	Total Dermal:	8.1E-7	Total Dermal:	1.1E-5
					Total Risk:	3.5E-5	Total Risk:	9.3E-7	Total Risk:	1.3E-5

Note:

-- - not applicable
EPC - exposure point concentration
PAHs - Polycyclic aromatic hydrocarbons
PCBs - Polychlorinated biphenyls
PCDD/Fs - Polychlorinated dibenzo-*p*-dioxins and dibenzofurans
TEQ - Toxic equivalence quotient

[a] EPCs and toxicity values represent those identified in TAMS 2002b.
[b] Background, pre-remediation and post-remediation values as identified in text.

TABLE I.34
RISK ESTIMATES FOR CONTACT WITH SOUTH BASIN SEDIMENTS FOR RECREATIONAL VISITORS: CHILDREN (AGES 6-18) - ALTERNATIVES B THROUGH J

					Alternatives B - D2		Alternative E		Alternatives F - H		Alternative I		Alternative J	
Exposure Route	Chemical of Concern	Dermal Absorption Factor[a]	Intake (Cancer)	Cancer Slope Factor[a] $(mg/kg\text{-}day)^{-1}$	Medium EPC Value[a] (mg/kg)	Cancer Risk	Medium EPC Value (mg/kg)	Cancer Risk	Medium EPC Value (mg/kg)	Cancer Risk	Medium EPC Value (mg/kg)	Cancer Risk	Medium EPC Value (mg/kg)	Cancer Risk
Ingestion	**Metals and Organometallic Compounds**													
	Arsenic	--	4.4E-8	1.5E+0	2.9	6.5E-8	2.9	6.5E-8	2.9	6.7E-8	2.9	6.7E-8	3.9	9.0E-8
	Organic Compounds													
	1,4-Dichlorobenzene	--	9.6E-7	2.4E-2	63	2.3E-8	63	2.3E-8	63	2.3E-8	63	2.3E-8	63	2.3E-8
	Benzene	--	9.4E-7	5.5E-2	61	5.2E-8	61	5.2E-8	61	5.2E-8	61	5.2E-8	61	5.2E-8
	Dieldrin	--	1.3E-10	1.6E+1	0.0087	2.1E-9	0.0087	2.1E-9	0.0087	2.1E-9	0.0087	2.1E-9	0.0087	2.1E-9
	Hexachlorobenzene	--	1.9E-9	1.6E+0	0.12	3.0E-9	0.14	3.5E-9	0.12	2.9E-9	0.14	3.4E-9	0.037	9.0E-10
	Methylene chloride	--	1.3E-7	7.5E-3	8.5	9.7E-10	8.5	9.7E-10	8.5	9.7E-10	8.5	9.7E-10	8.5	9.7E-10
	PAHs													
	Benz[a]anthracene	--	8.3E-9	7.3E-1	0.54	6.1E-9	0.54	6.1E-9	0.44	4.9E-9	0.44	4.9E-9	0.056	6.2E-10
	Benzo[a]pyrene	--	5.4E-9	7.3E+0	0.35	3.9E-8	0.36	4.0E-8	0.27	3.0E-8	0.28	3.2E-8	0.061	6.8E-9
	Benzo[b]fluoranthene	--	6.9E-9	7.3E-1	0.45	5.0E-9	0.45	5.0E-9	0.40	4.5E-9	0.40	4.5E-9	0.058	6.5E-10
	Benzo[k]fluoranthene	--	5.4E-9	7.3E-2	0.35	3.9E-10	0.35	3.9E-10	0.29	3.2E-10	0.29	3.2E-10	0.057	6.3E-11
	Chrysene	--	8.5E-9	7.3E-3	0.56	6.2E-11	0.56	6.2E-11	0.47	5.3E-11	0.47	5.3E-11	0.065	7.2E-12
	Dibenz[a,h]anthracene	--	1.7E-9	7.3E+0	0.11	1.3E-8	0.11	1.3E-8	0.10	1.1E-8	0.10	1.1E-8	0.056	6.3E-9
	Indeno[1,2,3-cd]pyrene	--	3.8E-9	7.3E-1	0.25	2.8E-9	0.25	2.8E-9	0.22	2.4E-9	0.22	2.4E-9	0.054	6.1E-10
	PCBs total	--	1.4E-9	2.0E+0	0.094	2.9E-9	0.11	3.4E-9	0.094	2.9E-9	0.11	3.4E-9	0.048	1.5E-9
	PCDD/F TEQ	--	8.1E-14	1.5E+5	0.0000053	1.2E-8	0.0000053	1.2E-8	0.0000053	1.2E-8	0.0000053	1.2E-8	0.0000053	1.2E-8
					Total Ingestion:	2.3E-7	Total Ingestion:	2.3E-7	Total Ingestion:	2.2E-7	Total Ingestion:	2.2E-7	Total Ingestion:	2.0E-7
Dermal	**Metals and Organometallic Compounds**													
	Arsenic	0.03	1.9E-7	1.5E+0	2.9	2.9E-7	2.9	2.9E-7	2.9	2.9E-7	2.9	2.9E-7	3.9	3.9E-7
	Organic Compounds													
	1,4-Dichlorobenzene	0.10	1.4E-5	2.4E-2	63	3.4E-7	63	3.4E-7	63	3.4E-7	63	3.4E-7	63	3.4E-7
	Hexachlorobenzene	0.10	2.7E-8	1.6E+0	0.12	4.4E-8	0.14	5.1E-8	0.1	4.3E-8	0.1	5.0E-8	0.037	1.3E-8
	PAHs													
	Benz[a]anthracene	0.13	1.6E-7	7.3E-1	0.54	1.1E-7	0.54	1.1E-7	0.44	9.4E-8	0.44	9.4E-8	0.056	1.2E-8
	Benzo[a]pyrene	0.13	1.0E-7	7.3E+0	0.35	7.4E-7	0.36	7.6E-7	0.27	5.8E-7	0.28	6.0E-7	0.061	1.3E-7
	Benzo[b]fluoranthene	0.13	1.3E-7	7.3E-1	0.45	9.5E-8	0.45	9.5E-8	0.40	8.5E-8	0.40	8.5E-8	0.058	1.2E-8
	Benzo[k]fluoranthene	0.13	1.0E-7	7.3E-2	0.35	7.4E-9	0.35	7.4E-9	0.29	6.1E-9	0.29	6.1E-9	0.057	1.2E-9
	Chrysene	0.13	1.6E-7	7.3E-3	0.56	1.2E-9	0.56	1.2E-9	0.47	1.0E-9	0.47	1.0E-9	0.065	1.4E-10
	Dibenz[a,h]anthracene	0.13	3.3E-8	7.3E+0	0.11	2.4E-7	0.11	2.4E-7	0.10	2.1E-7	0.10	2.1E-7	0.056	1.2E-7
	Indeno[1,2,3-cd]pyrene	0.13	7.2E-8	7.3E-1	0.25	5.3E-8	0.25	5.3E-8	0.22	4.6E-8	0.22	4.6E-8	0.054	1.2E-8
	PCBs total	0.14	2.9E-8	2.0E+0	0.094	5.9E-8	0.11	6.9E-8	0.094	5.9E-8	0.11	7.0E-8	0.048	3.0E-8
	PCDD/F TEQ	0.03	3.5E-13	1.5E+5	0.0000053	5.3E-8	0.0000053	5.3E-8	0.0000053	5.3E-8	0.0000053	5.3E-8	0.0000053	5.3E-8
					Total Dermal:	2.0E-6	Total Dermal:	2.1E-6	Total Dermal:	1.8E-6	Total Dermal:	1.8E-6	Total Dermal:	1.1E-6
					Total Risk:	2.3E-6	Total Risk:	2.3E-6	Total Risk:	2.0E-6	Total Risk:	2.1E-6	Total Risk:	1.3E-6

Note:

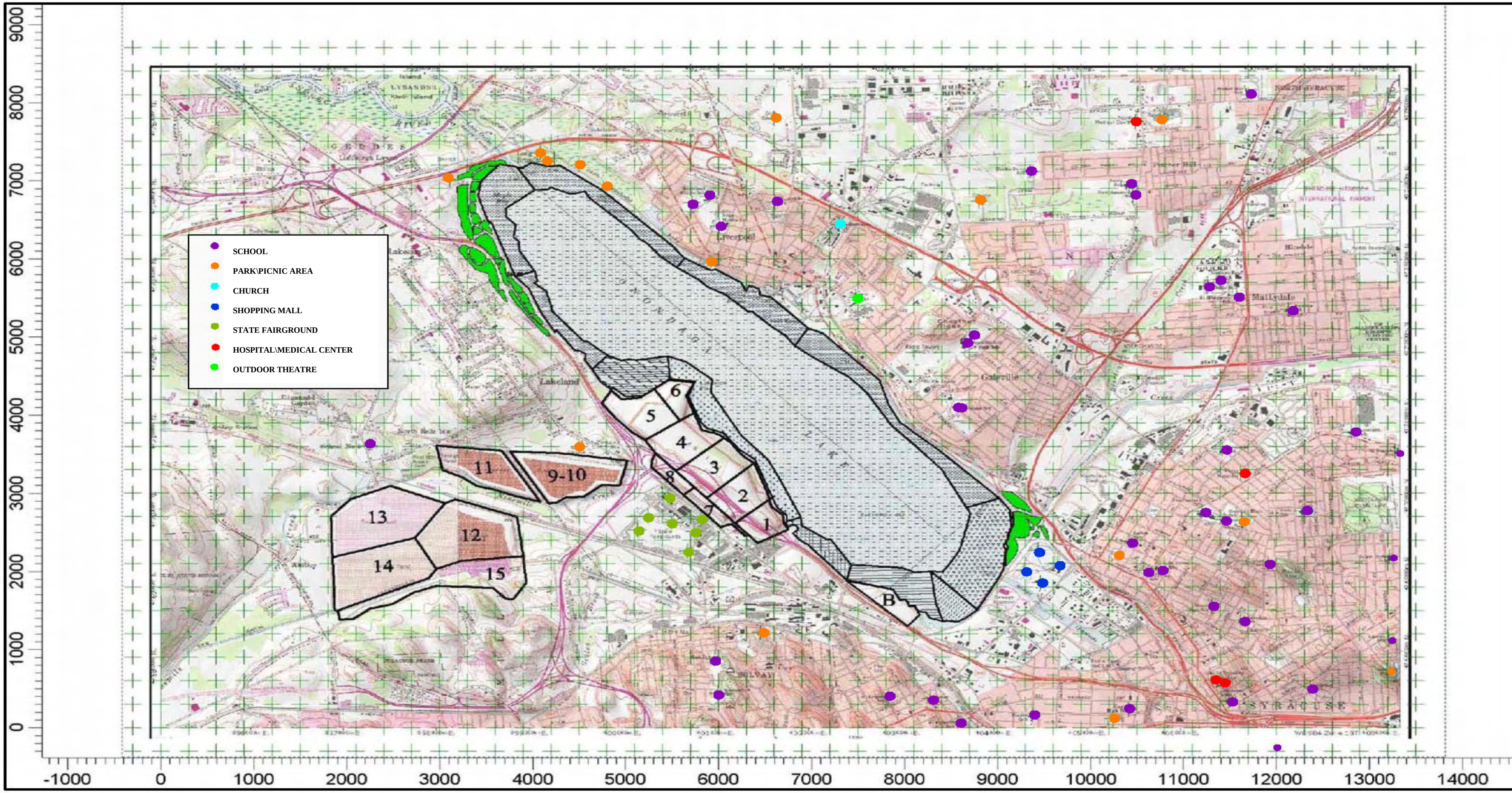
--	- not applicable	PCBs	- Polychlorinated biphenyls
EPC	- exposure point concentration	PCDD/Fs	- Polychlorinated dibenzo-*p*-dioxins and dibenzofurans
PAHs	- Polycyclic aromatic hydrocarbons	TEQ	- Toxic equivalence quotient

[a] EPCs and toxicity values represent those identified in TAMS 2002b.

[b] Background, pre-remediation and post-remediation values as identified in text.

APPENDIX I

FIGURES



Note: Receptor locations shown indicate areas where sensitive receptors (e.g., schools) or large numbers of people may be present (e.g., shopping mall, fairgrounds).

ENVIRON

FIGURE I.8

Honeywell ONONDAGA LAKE SYRACUSE, NEW YORK

SOURCE AND RECEPTOR LOCATIONS

PARSONS

290 ELWOOD DAVIS RD, SUITE 312, LIVERPOOL, NY 13088 PHONE: (315) 451-9560

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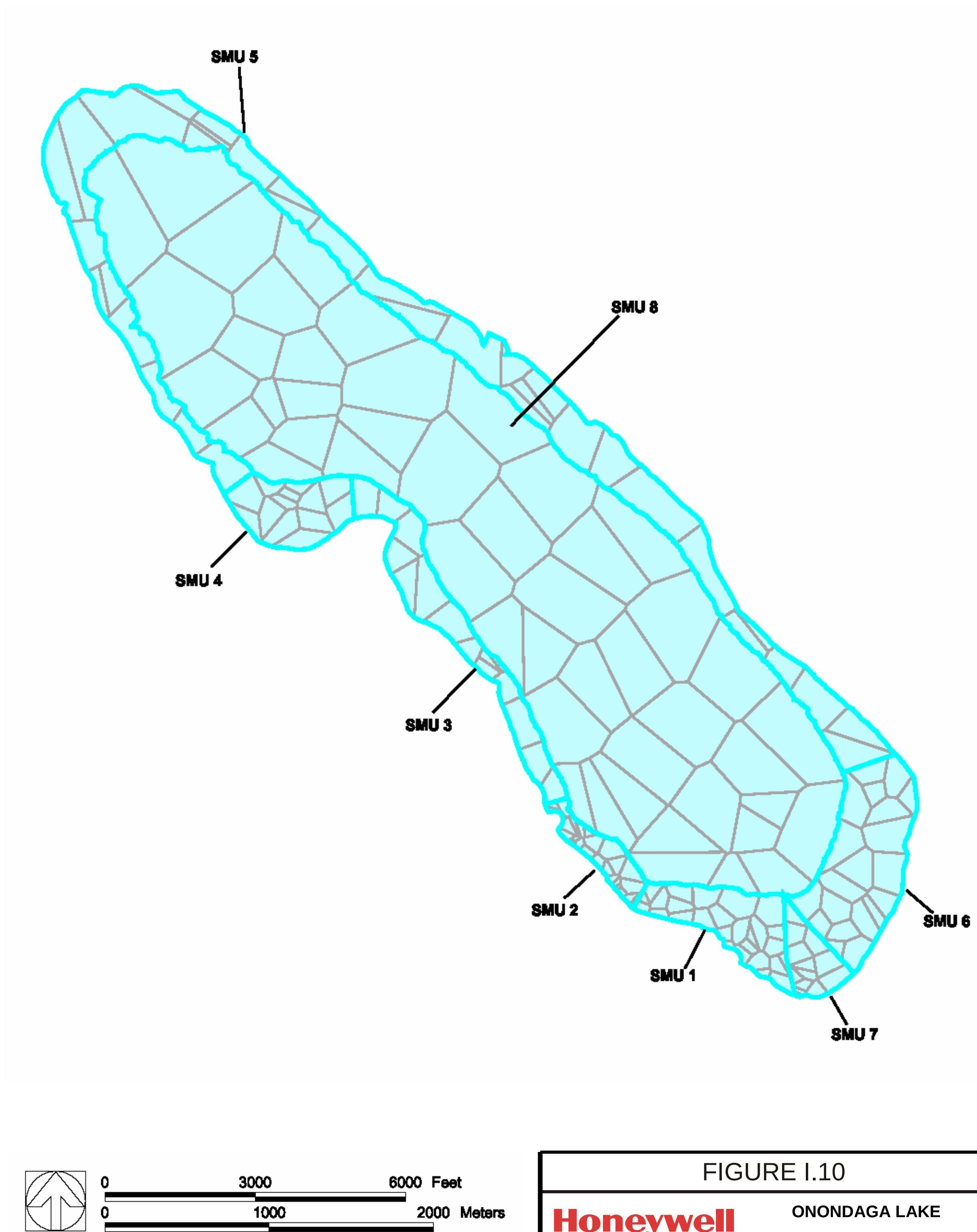

Exponent®

FIGURE I.10

Honeywell

ONONDAGA LAKE

SYRACUSE, NEW YORK

SMUs AND ASSOCIATED THEISSEN POLYGONS IN ONONDAGA LAKE

PARSONS

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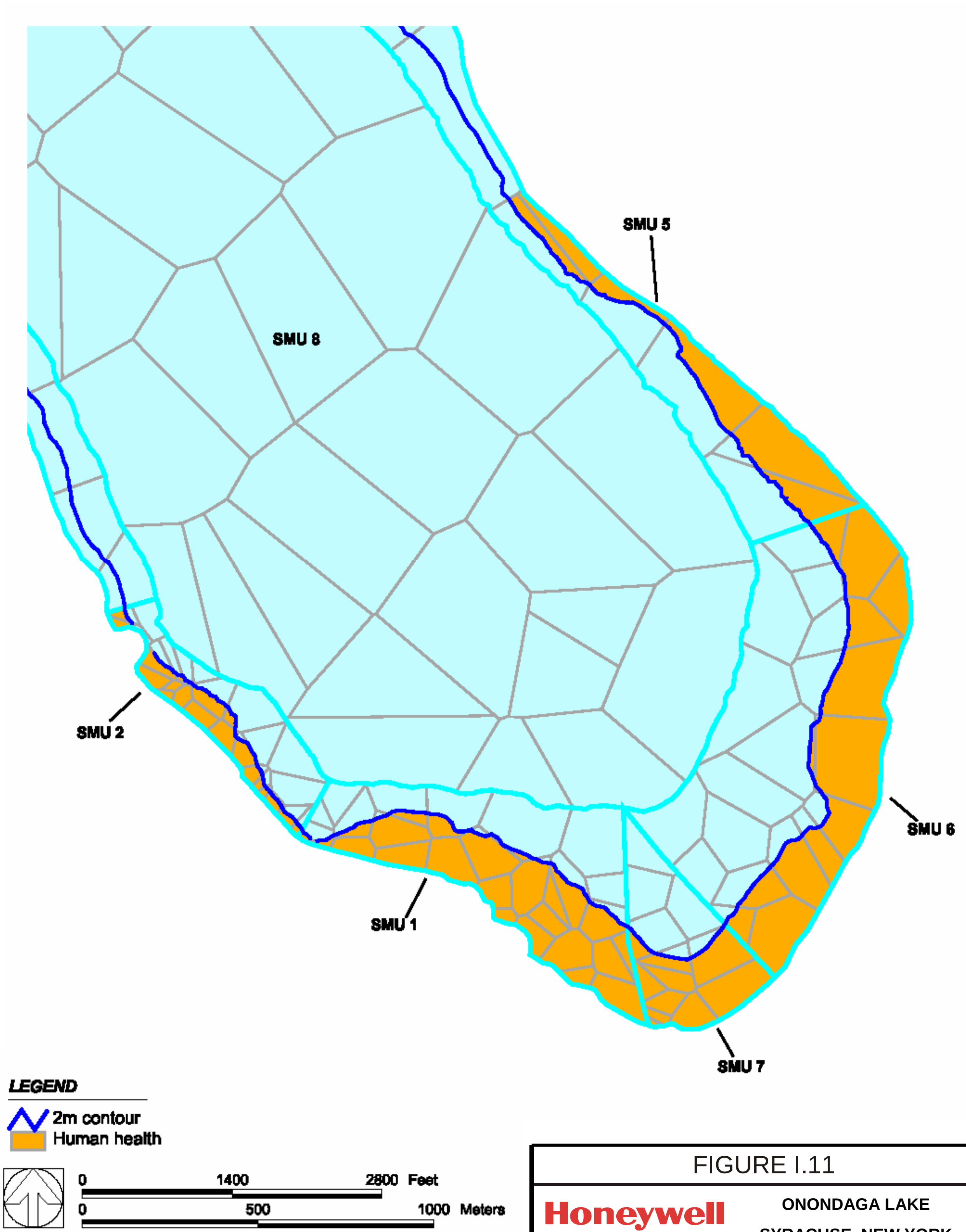
P:\Honeywell -SYR\741627\NOV Final FS\Appendix I\Figures I.10,11 11-30-04.ppt



Exponent®

FIGURE I.11

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

SOUTH BASIN SEDIMENT EVALUATED FOR RESIDUAL HUMAN HEALTH RISK

PARSONS

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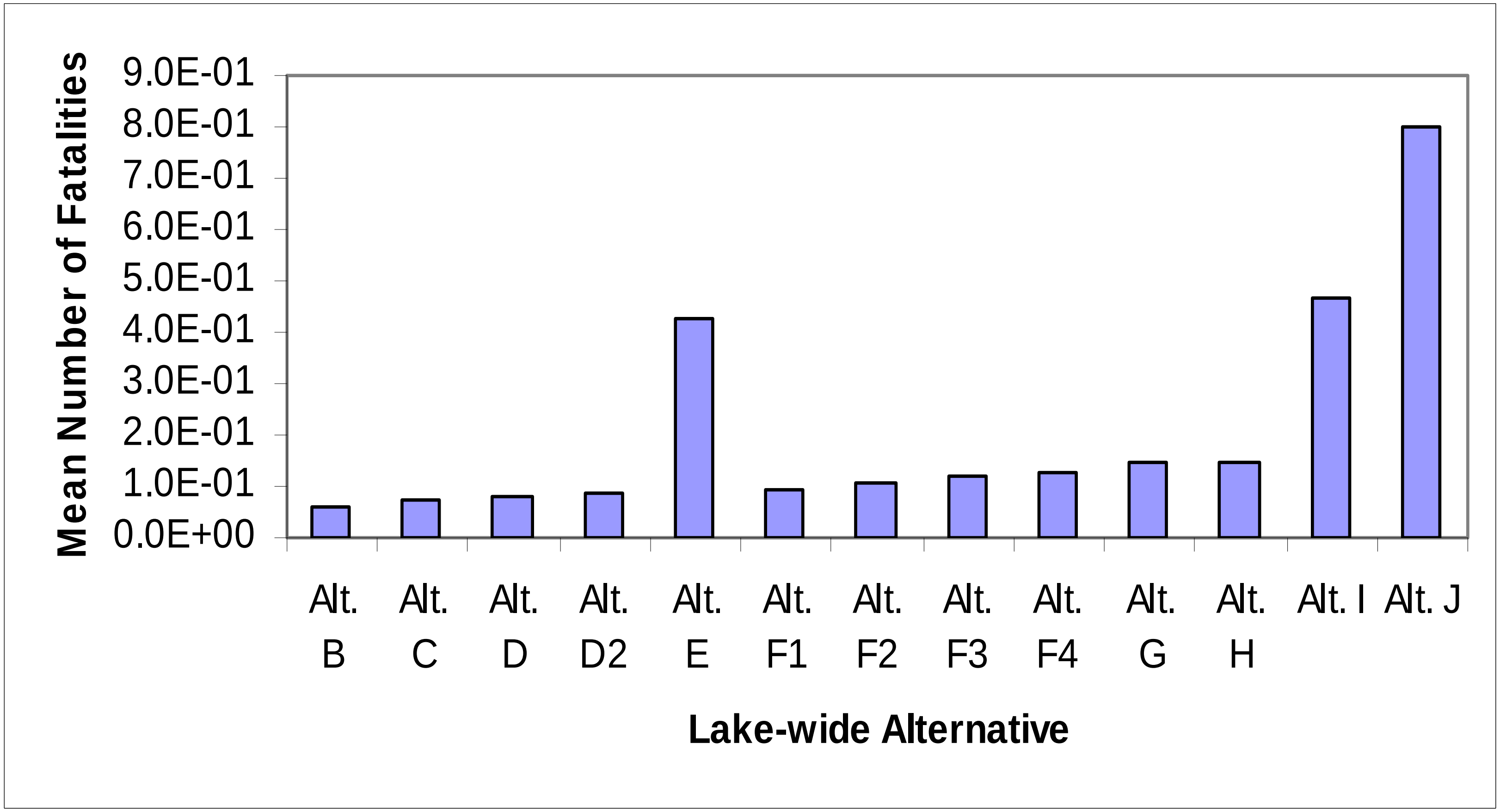

FIGURE I.1

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

PREDICTED INCIDENCE OF FATALITIES FOR LAKE-WIDE ALTERNATIVES – WORKER ACCIDENTS

PARSONS

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ENVIRON

P:\Honeywell -SYR\741627\NOV Final FS\Figures I.1-I.9 11-30-04.ppt

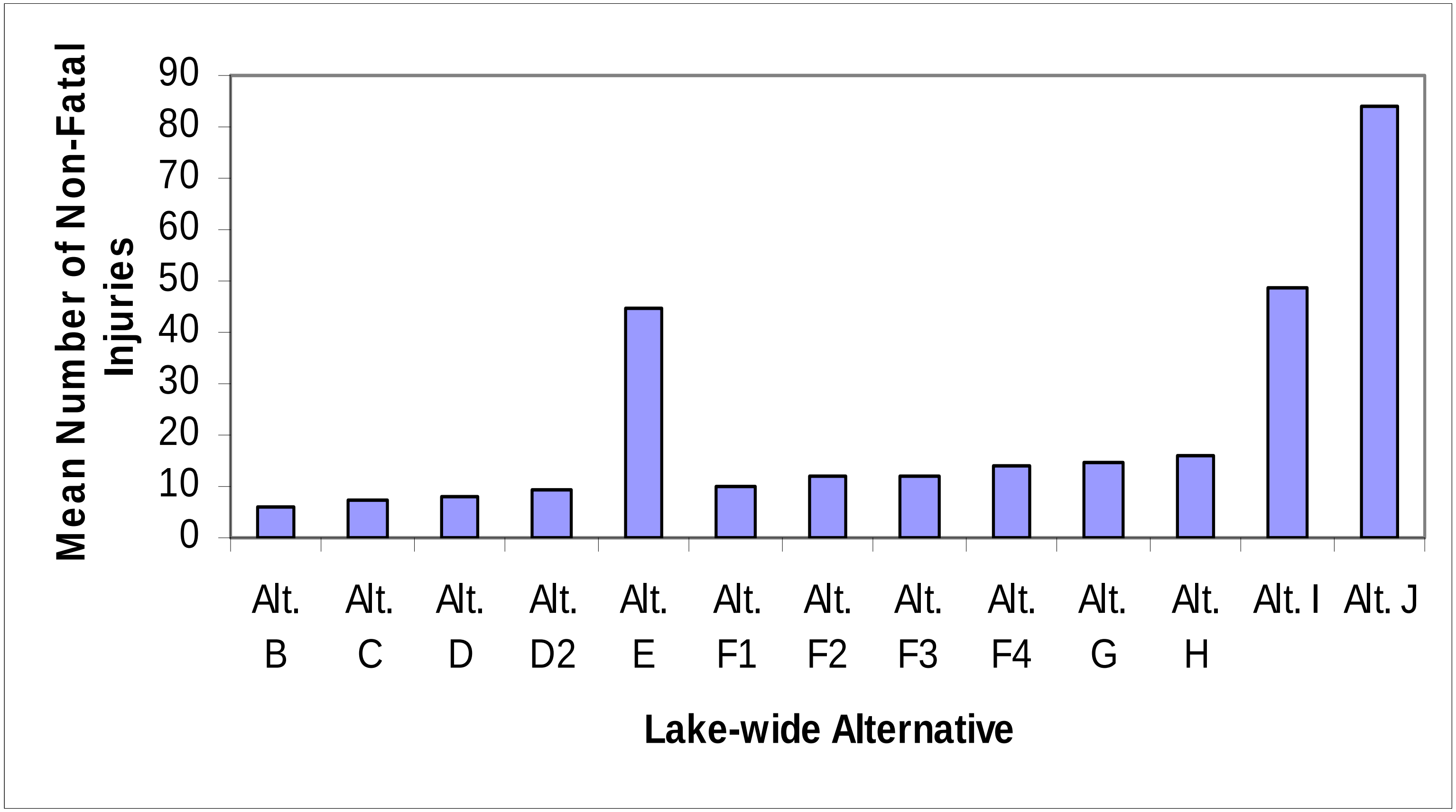

FIGURE I.2

Honeywell

ONONDAGA LAKE

SYRACUSE, NEW YORK

PREDICTED INDICENCE OF NON-FATAL INJURIES FOR LAKE-WIDE ALTERNATIVES – WORKER ACCIDENTS

ENVIRON

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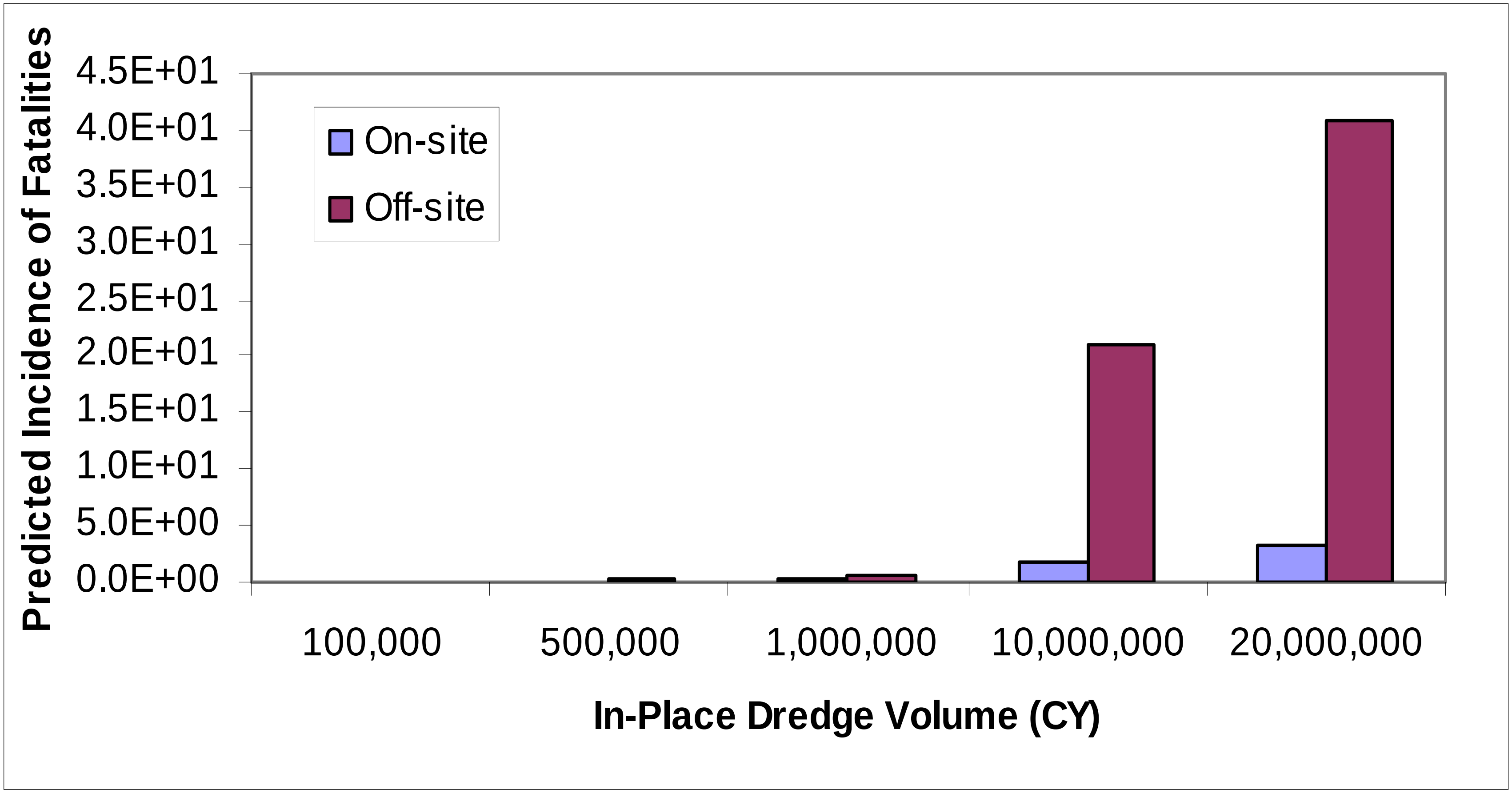

FIGURE I.3

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

PREDICTED INCIDENCE OF TRANSPORTATION RELATED FATALITIES: ON-SITE CONSOLIDATION VS OFF-SITE DISPOSAL

ENVIRON

PARSONS

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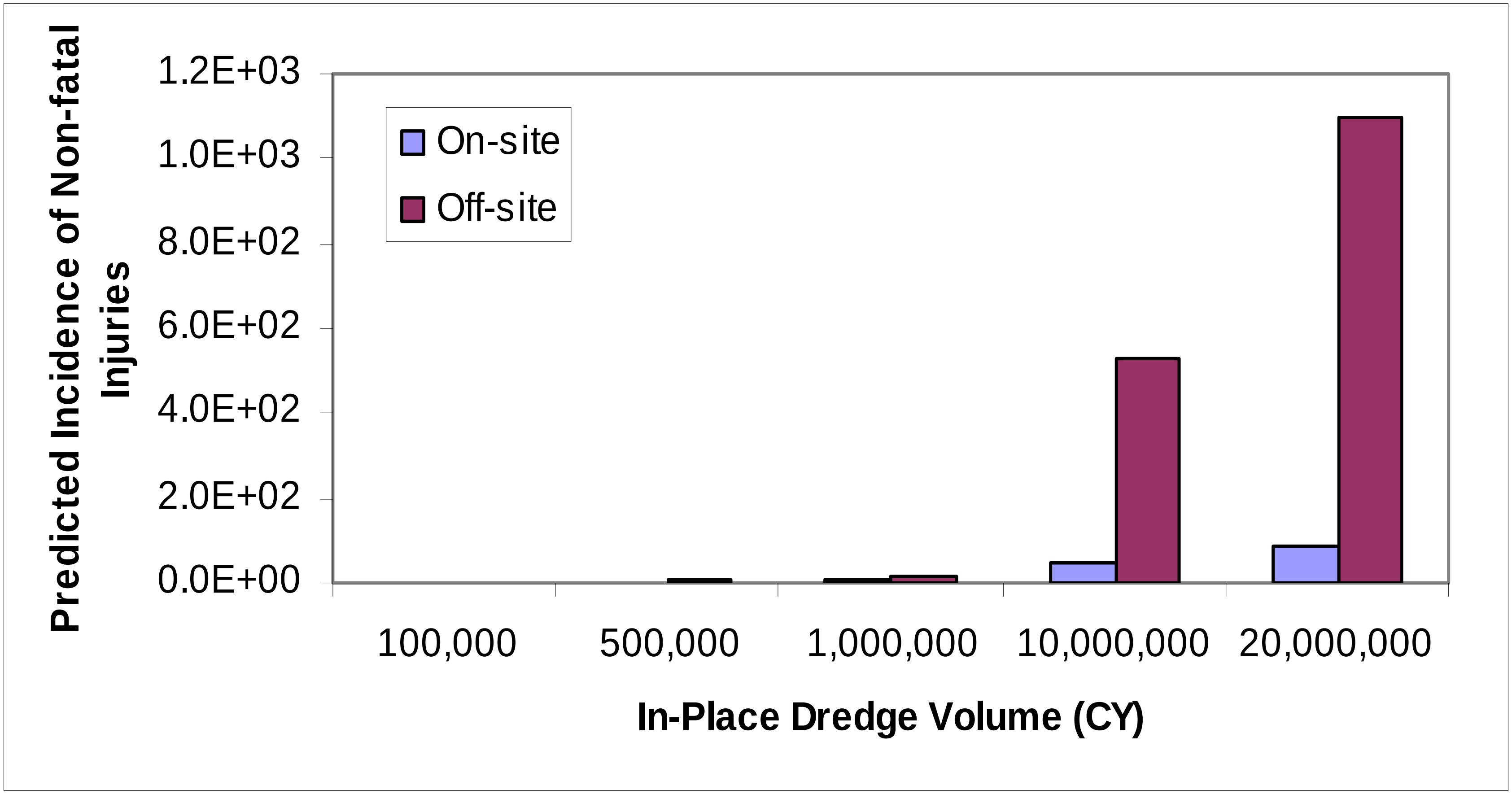

FIGURE I.4

Honeywell

ONONDAGA LAKE

SYRACUSE, NEW YORK

PREDICTED INCIDENCE OF TRANSPORTATION RELATED NON-FATAL INJURIES: ON-SITE CONSOLIDATION VS OFF-SITE DISPOSAL

ENVIRON

PARSONS

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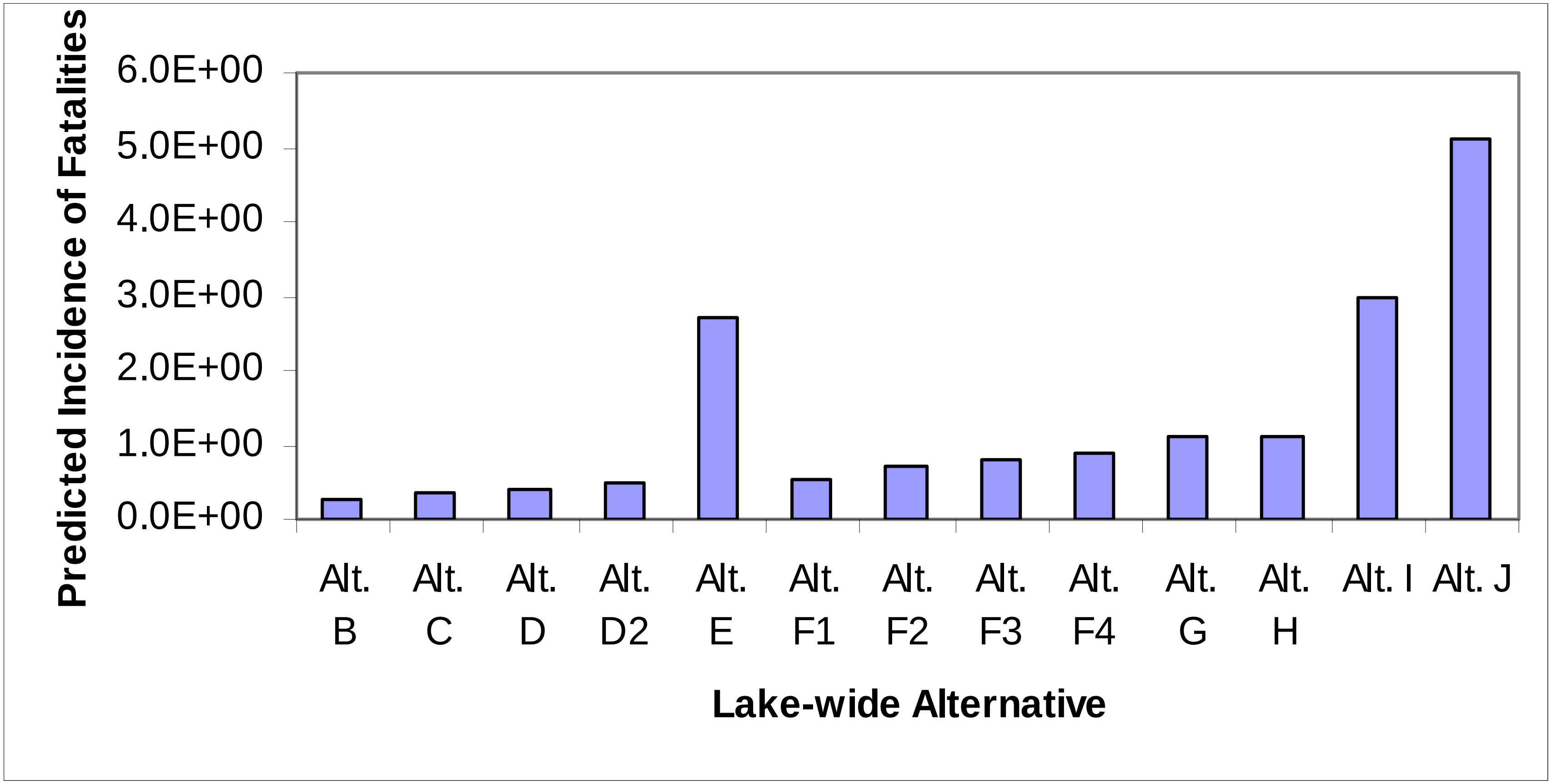

FIGURE I.5

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

PREDICTED INCIDENCE OF TRANSPORTATION RELATED FATALITIES: COMPARISON OF LAKE-WIDE ALTERNATIVES

ENVIRON

PARSONS

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P:\Honeywell -SYR\741627\NOV Final FS\Figures I.1-I.9 11-30-04.ppt

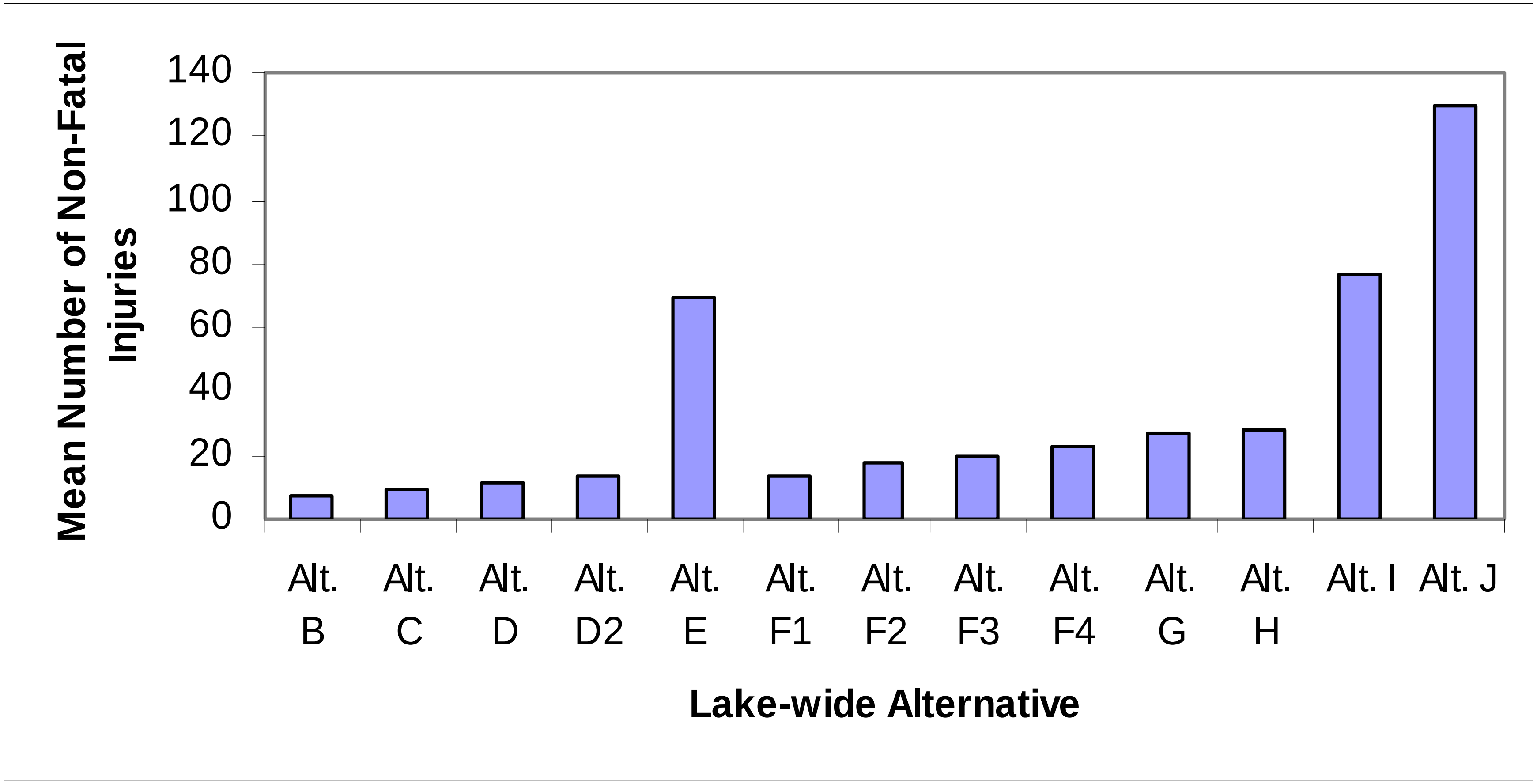


FIGURE I.6

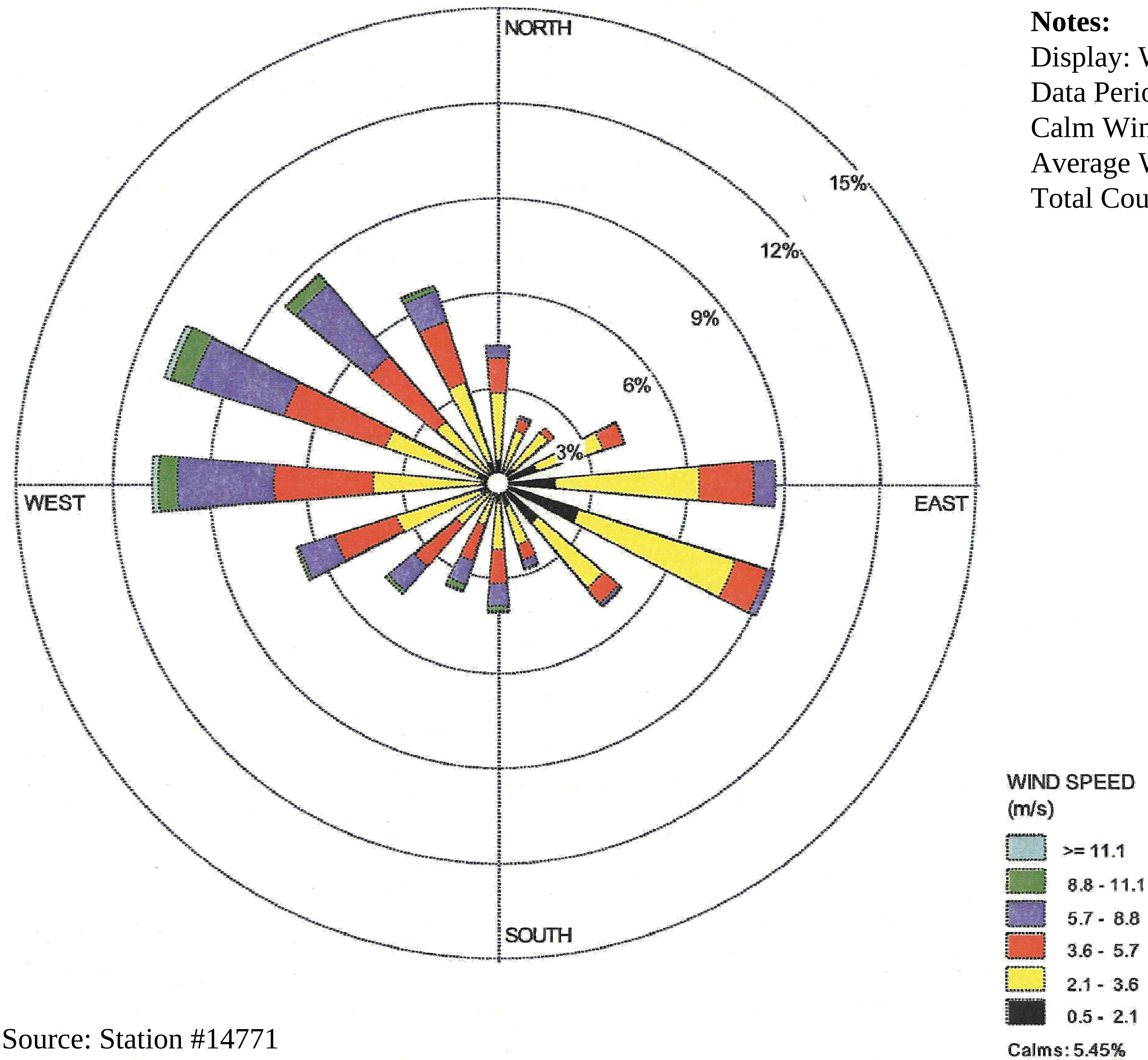
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

PREDICTED INCIDENCE OF TRANSPORTATION RELATED NON-FATAL INJURIES: COMPARISON OF LAKE-WIDE ALTERNATIVES

ENVIRON

PARSONS
290 ELWOOD DAVIS RD, SUITE 312, LIVERPOOL, NY 13088 PHONE: (315) 451-9560



Notes:
Display: Wind Speed Direction (blowing from)
Data Period: 1989 JAN 1 – DEC 31
Calm Winds: 5.45%
Average Wind Speed: 3.69 m/s
Total Count: 8760 hours

Source: Station #14771
Syracuse\Hancock International Airport, NY

ENVIRON

FIGURE I.7

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

WIND ROSE DIAGRAM OF SURFACE AIR DATA SYRACUSE HANCOCK INTERNATIONAL AIRPORT, 1989

PARSONS
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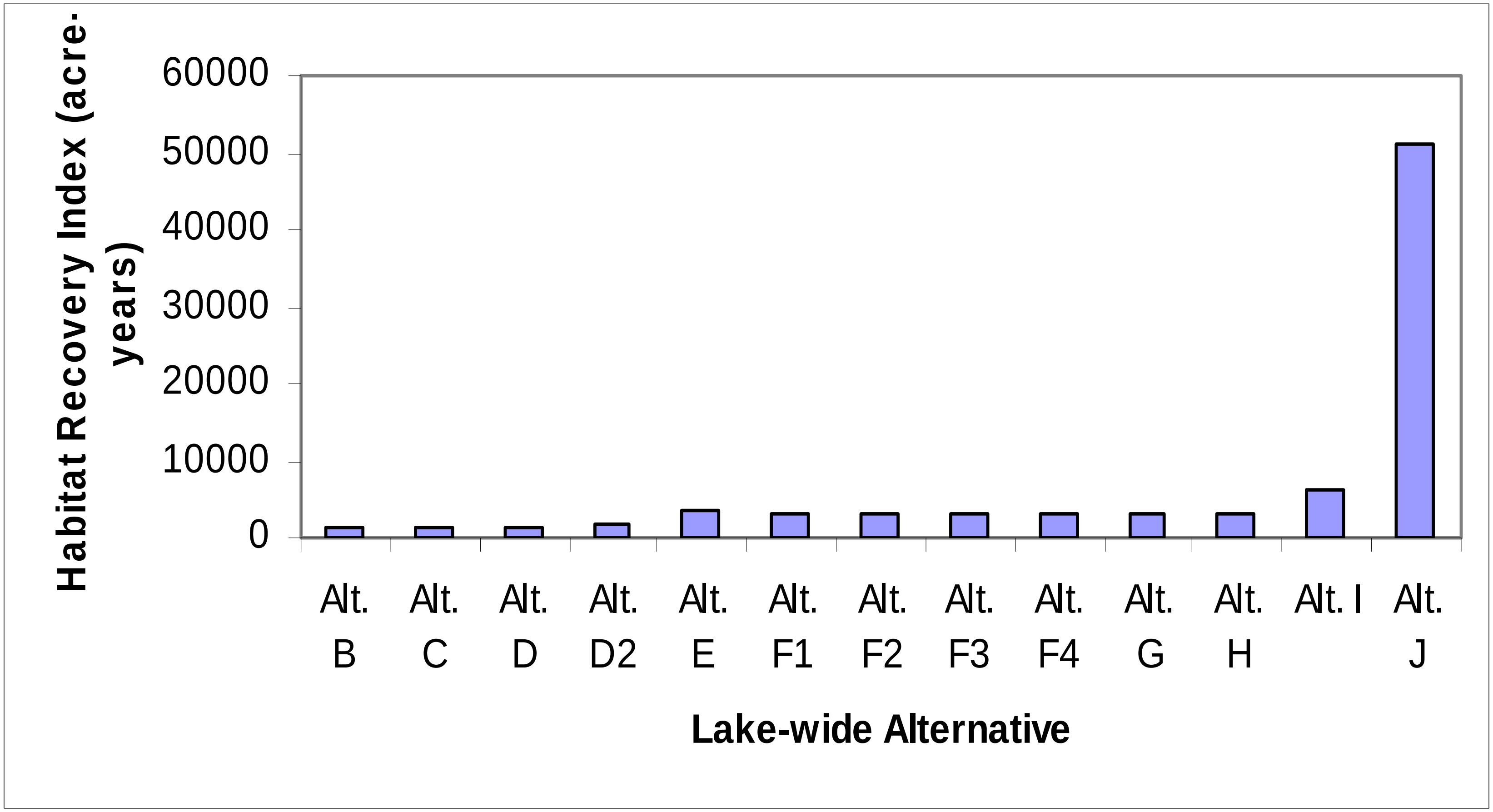

FIGURE I.9

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ONONDAGA LAKE
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HABITAT RECOVERY TIME

ENVIRON

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APPENDIX I

ATTACHMENT A

WORKER ACCIDENT ANALYSIS

TABLE A.1
REMEDIATION WORKER FATALITY RISK ESTIMATES FOR LAKE-WIDE ALTERNATIVES

REMEDIATION LABOR CATEGORY	ASSUMED OCCUPATION CLASS[1]	OCCUPATION FATALITY RATE[1] (death rate / person-yr)	ALTERNATIVE								
			Alt. B			Alt. C			Alt. D		
			Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate
Leverman	Water transportation	4.53E-04	21,091	4.87	2.21E-05	23,556	4.39	1.99E-05	25,781	4.37	1.98E-05
Mate	Ship captains and mates, except fishing boats	3.14E-04	8,569	1.98	6.21E-06	11,765	2.19	6.87E-06	12,262	2.08	6.52E-06
Captain (Tug)	Ship captains and mates, except fishing boats	3.14E-04	27,533	6.36	2.00E-05	31,061	5.78	1.81E-05	31,530	5.34	1.68E-05
Deckhand	Sailors and deckhands	8.75E-04	55,065	12.72	1.11E-04	62,122	11.57	1.01E-04	62,981	10.67	9.34E-05
Mechanic	Heavy equipment mechanics	1.95E-04	0	0.00	0.00E+00	0	0.00	0.00E+00	160	0.03	5.28E-08
Operator	Grader, dozer, and scraper operators	3.06E-04	85,420	19.73	6.04E-05	113,377	21.11	6.46E-05	130,901	22.18	6.79E-05
Superintendent	Supervisors, construction occupations	1.09E-04	31,709	7.32	7.99E-06	39,384	7.33	8.00E-06	44,294	7.51	8.19E-06
Surveyor	Engineers, architects, and surveyors	1.71E-05	55,065	12.72	2.17E-06	62,122	11.57	1.98E-06	63,061	10.69	1.83E-06
Engineer	Operating engineers	1.94E-04	39,542	9.13	1.77E-05	45,878	8.54	1.66E-05	49,041	8.31	1.61E-05
Project Manager	Supervisors, construction occupations	1.09E-04	29,842	6.89	7.52E-06	33,704	6.28	6.85E-06	30,435	5.16	5.63E-06
Operations Manager	Supervisors, construction occupations	1.09E-04	528	0.12	1.33E-07	528	0.10	1.07E-07	528	0.09	9.77E-08
Laborer	Construction laborers	3.18E-04	78,653	18.16	5.78E-05	113,598	21.15	6.73E-05	139,141	23.58	7.50E-05
Total Estimated Hours			433,017	100.00		537,095	100.00		590,115	100.00	
Weighted Death Rate / person-yr					**3.13E-04**			**3.12E-04**			**3.11E-04**
Total Estimated Time (person-years) [3]			180			224			246		
Mean No. of Fatalities [4]					**5.65E-02**			**6.97E-02**			**7.65E-02**
Risk of at least one fatality [5]					**5.49E-02**			**6.73E-02**			**7.37E-02**

TABLE A.1
REMEDIATION WORKER FATALITY RISK ESTIMATES FOR LAKE-WIDE ALTERNATIVES

REMEDIATION LABOR CATEGORY	ASSUMED OCCUPATION CLASS[1]	OCCUPATION FATALITY RATE[1] (death rate / person-yr)	ALTERNATIVE											
			Alt. D2			Alt. E			Alt. F1			Alt. F2		
			Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate
Leverman	Water transportation	4.53E-04	30,151	4.39	1.99E-05	156,286	4.65	2.10E-05	32,263	4.47	2.02E-05	38,037	4.33	1.96E-05
Mate	Ship captains and mates, except fishing boats	3.14E-04	14,240	2.07	6.51E-06	76,260	2.27	7.12E-06	13,878	1.92	6.03E-06	18,366	2.09	6.56E-06
Captain (Tug)	Ship captains and mates, except fishing boats	3.14E-04	35,884	5.23	1.64E-05	156,286	4.65	1.46E-05	37,454	5.19	1.63E-05	43,310	4.93	1.55E-05
Deckhand	Sailors and deckhands	8.75E-04	71,687	10.44	9.14E-05	311,293	9.26	8.10E-05	74,827	10.36	9.07E-05	86,461	9.85	8.62E-05
Mechanic	Heavy equipment mechanics	1.95E-04	160	0.02	4.54E-08	2,560	0.08	1.48E-07	160	0.02	4.32E-08	320	0.04	7.10E-08
Operator	Grader, dozer, and scraper operators	3.06E-04	154,947	22.57	6.91E-05	880,074	26.17	8.01E-05	157,905	21.87	6.69E-05	202,134	23.02	7.05E-05
Superintendent	Supervisors, construction occupations	1.09E-04	52,770	7.69	8.39E-06	271,843	8.08	8.83E-06	54,385	7.53	8.22E-06	69,161	7.88	8.60E-06
Surveyor	Engineers, architects, and surveyors	1.71E-05	71,767	10.45	1.79E-06	312,573	9.30	1.59E-06	74,907	10.37	1.77E-06	86,621	9.87	1.69E-06
Engineer	Operating engineers	1.94E-04	56,650	8.25	1.60E-05	264,615	7.87	1.53E-05	61,263	8.49	1.65E-05	71,661	8.16	1.58E-05
Project Manager	Supervisors, construction occupations	1.09E-04	33,844	4.93	5.38E-06	185,638	5.52	6.03E-06	35,583	4.93	5.38E-06	39,034	4.45	4.85E-06
Operations Manager	Supervisors, construction occupations	1.09E-04	528	0.08	8.40E-08	528	0.02	1.71E-08	528	0.07	7.98E-08	528	0.06	6.56E-08
Laborer	Construction laborers	3.18E-04	163,894	23.87	7.59E-05	744,666	22.15	7.05E-05	178,861	24.77	7.88E-05	222,406	25.33	8.06E-05
Total Estimated Hours			686,522	100.00		3,362,622	100.00		722,014	100.00		878,039	100.00	
Weighted Death Rate / person-yr					**3.11E-04**			**3.06E-04**			**3.11E-04**			**3.10E-04**
Total Estimated Time (person-years) [3]			286			1,401			301			366		
Mean No. of Fatalities [4]					**8.89E-02**			**4.29E-01**			**9.36E-02**			**1.13E-01**
Risk of at least one fatality [5]					**8.51E-02**			**3.49E-01**			**8.93E-02**			**1.07E-01**

TABLE A.1
REMEDIATION WORKER FATALITY RISK ESTIMATES FOR LAKE-WIDE ALTERNATIVES

REMEDIATION LABOR CATEGORY	ASSUMED OCCUPATION CLASS[1]	OCCUPATION FATALITY RATE[1] (death rate / person-yr)	ALTERNATIVE					
			Alt. F3			Alt. F4		
			Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate
Leverman	Water transportation	4.53E-04	41,063	4.48	2.03E-05	45,311	4.45	2.01E-05
Mate	Ship captains and mates, except fishing boats	3.14E-04	22,774	2.48	7.80E-06	26,306	2.58	8.11E-06
Captain (Tug)	Ship captains and mates, except fishing boats	3.14E-04	46,430	5.07	1.59E-05	50,690	4.98	1.56E-05
Deckhand	Sailors and deckhands	8.75E-04	92,699	10.11	8.85E-05	101,059	9.92	8.69E-05
Mechanic	Heavy equipment mechanics	1.95E-04	320	0.03	6.80E-08	640	0.06	1.22E-07
Operator	Grader, dozer, and scraper operators	3.06E-04	207,255	22.61	6.92E-05	233,201	22.90	7.01E-05
Superintendent	Supervisors, construction occupations	1.09E-04	76,687	8.37	9.13E-06	86,854	8.53	9.31E-06
Surveyor	Engineers, architects, and surveyors	1.71E-05	92,859	10.13	1.73E-06	101,379	9.96	1.70E-06
Engineer	Operating engineers	1.94E-04	78,038	8.51	1.65E-05	85,256	8.37	1.62E-05
Project Manager	Supervisors, construction occupations	1.09E-04	40,001	4.36	4.76E-06	42,186	4.14	4.52E-06
Operations Manager	Supervisors, construction occupations	1.09E-04	528	0.06	6.29E-08	528	0.05	5.66E-08
Laborer	Construction laborers	3.18E-04	217,943	23.78	7.56E-05	244,960	24.05	7.65E-05
Total Estimated Hours			916,597	100.00		1,018,370	100.00	
Weighted Death Rate / person-yr					**3.10E-04**			**3.09E-04**
Total Estimated Time (person-years) [3]			382			424		
Mean No. of Fatalities [4]					**1.18E-01**			**1.31E-01**
Risk of at least one fatality [5]					**1.12E-01**			**1.23E-01**

TABLE A.1
REMEDIATION WORKER FATALITY RISK ESTIMATES FOR LAKE-WIDE ALTERNATIVES

REMEDIATION LABOR CATEGORY	ASSUMED OCCUPATION CLASS(1)	OCCUPATION FATALITY RATE(1) (death rate / person-yr)	ALTERNATIVE											
			Alt. G			Alt. H			Alt. I			Alt. J		
			Estimated Hours (2)	% Hours Distribution	Weighted Rate	Estimated Hours (2)	% Hours Distribution	Weighted Rate	Estimated Hours (2)	% Hours Distribution	Weighted Rate	Estimated Hours (2)	% Hours Distribution	Weighted Rate
Leverman	Water transportation	4.53E-04	49,703	4.42	2.00E-05	53,155	4.46	2.02E-05	171,946	4.70	2.13E-05	313,998	5.05	2.29E-05
Mate	Ship captains and mates, except fishing boats	3.14E-04	29,938	2.66	8.36E-06	31,578	2.65	8.31E-06	82,507	2.25	7.07E-06	135,420	2.18	6.84E-06
Captain (Tug)	Ship captains and mates, except fishing boats	3.14E-04	55,094	4.90	1.54E-05	58,626	4.92	1.54E-05	171,946	4.70	1.47E-05	313,998	5.05	1.59E-05
Deckhand	Sailors and deckhands	8.75E-04	109,867	9.78	8.56E-05	116,931	9.81	8.59E-05	342,451	9.36	8.19E-05	625,756	10.07	8.81E-05
Mechanic	Heavy equipment mechanics	1.95E-04	640	0.06	1.11E-07	640	0.05	1.05E-07	2,880	0.08	1.53E-07	4,480	0.07	1.40E-07
Operator	Grader, dozer, and scraper operators	3.06E-04	262,545	23.36	7.15E-05	276,625	23.20	7.10E-05	943,919	25.79	7.89E-05	1,471,177	23.67	7.24E-05
Superintendent	Supervisors, construction occupations	1.09E-04	98,240	8.74	9.54E-06	104,141	8.74	9.54E-06	296,145	8.09	8.83E-06	505,824	8.14	8.88E-06
Surveyor	Engineers, architects, and surveyors	1.71E-05	110,187	9.80	1.68E-06	117,251	9.83	1.68E-06	343,891	9.40	1.61E-06	627,996	10.10	1.73E-06
Engineer	Operating engineers	1.94E-04	93,160	8.29	1.61E-05	97,867	8.21	1.59E-05	288,920	7.89	1.53E-05	493,717	7.94	1.54E-05
Project Manager	Supervisors, construction occupations	1.09E-04	44,529	3.96	4.33E-06	47,112	3.95	4.31E-06	200,603	5.48	5.98E-06	337,186	5.42	5.92E-06
Operations Manager	Supervisors, construction occupations	1.09E-04	528	0.05	5.13E-08	528	0.04	4.83E-08	528	0.01	1.57E-08	528	0.01	9.27E-09
Laborer	Construction laborers	3.18E-04	269,382	23.97	7.63E-05	287,756	24.14	7.68E-05	814,246	22.25	7.08E-05	1,385,339	22.29	7.09E-05
Total Estimated Hours			1,123,813	100.00		1,192,210	100.00		3,659,982	100.00		6,215,419	100.00	
Weighted Death Rate / person-yr					**3.09E-04**			**3.09E-04**			**3.07E-04**			**3.09E-04**
Total Estimated Time (person-years) (3)			468			497			1,525			2,590		
Mean No. of Fatalities (4)					**1.45E-01**			**1.54E-01**			**4.68E-01**			**8.01E-01**
Risk of at least one fatality (5)					**1.35E-01**			**1.42E-01**			**3.73E-01**			**5.51E-01**

NOTES:
1. Based on Bureau of Labor Statistics (1999-2002). Reported fatality rates from 1999 through 2002 were averaged.
2. Worker-hour estimates obtained from Appendix F, cost estimates.
3. The equivalent total manpower requirement for the remedy based on a workweek of 16 hours/day, 5 day/week, for 30 weeks/yr.
4. Mean number = (total estimated time) x (weighted death rate)
5. Risk estimate is the probability of at least one fatality occuring assuming a Poisson probability distribution.

TABLE A.2
REMEDIATION WORKER NON-FATAL INJURY RISK ESTIMATES FOR LAKE-WIDE ALTERNATIVES

REMEDIATION LABOR CATEGORY	ASSUMED OCCUPATION CLASS [1]	OCCUPATIONAL NON-FATAL INJURY RATE [1] (death rate / person-yr)	ALTERNATIVE											
			Alt. B			Alt. C			Alt. D			Alt. D2		
			Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate
Leverman	Water transportation	3.44E-02	21,091	4.87	1.68E-03	23,556	4.39	1.51E-03	25,781	4.37	1.50E-03	30,151	4.39	1.51E-03
Mate	Water transportation	3.44E-02	8,569	1.98	6.81E-04	11,765	2.19	7.54E-04	12,262	2.08	7.15E-04	14,240	2.07	7.14E-04
Captain (Tug)	Water transportation	3.44E-02	27,533	6.36	2.19E-03	31,061	5.78	1.99E-03	31,530	5.34	1.84E-03	35,884	5.23	1.80E-03
Deckhand	Water transportation	3.44E-02	55,065	12.72	4.37E-03	62,122	11.57	3.98E-03	62,981	10.67	3.67E-03	71,687	10.44	3.59E-03
Mechanic	Construction	3.18E-02	0	0.00	0.00E+00	0	0.00	0.00E+00	160	0.03	8.62E-06	160	0.02	7.41E-06
Operator	Construction	3.18E-02	85,420	19.73	6.27E-03	113,377	21.11	6.71E-03	130,901	22.18	7.05E-03	154,947	22.57	7.18E-03
Superintendent	Construction	3.18E-02	31,709	7.32	2.33E-03	39,384	7.33	2.33E-03	44,294	7.51	2.39E-03	52,770	7.69	2.44E-03
Surveyor	Construction	3.18E-02	55,065	12.72	4.04E-03	62,122	11.57	3.68E-03	63,061	10.69	3.40E-03	71,767	10.45	3.32E-03
Engineer	Construction	3.18E-02	39,542	9.13	2.90E-03	45,878	8.54	2.72E-03	49,041	8.31	2.64E-03	56,650	8.25	2.62E-03
Project Manager	Construction	3.18E-02	29,842	6.89	2.19E-03	33,704	6.28	2.00E-03	30,435	5.16	1.64E-03	33,844	4.93	1.57E-03
Operations Manager	Construction	3.18E-02	528	0.12	3.88E-05	528	0.10	3.13E-05	528	0.09	2.85E-05	528	0.08	2.45E-05
Laborer	Construction	3.18E-02	78,653	18.16	5.78E-03	113,598	21.15	6.73E-03	139,141	23.58	7.50E-03	163,894	23.87	7.59E-03
Total Estimated Hours			433,017	100.00		537,095	100.00		590,115	100.00		686,522	100.00	
Weighted Death Rate / person-yr					**3.25E-02**			**3.24E-02**			**3.24E-02**			**3.24E-02**
Total Estimated Time (person-years) [3]			180			224			246			286		
Mean No. of Non-Fatal Injuries [4]					**5.86E+00**			**7.26E+00**			**7.96E+00**			**9.26E+00**
Risk of at least one non-fatal injury [5]					**9.97E-01**			**9.99E-01**			**1.00E+00**			**1.00E+00**

TABLE A.2
REMEDIATION WORKER NON-FATAL INJURY RISK ESTIMATES FOR LAKE-WIDE ALTERNATIVES

REMEDIATION LABOR CATEGORY	ASSUMED OCCUPATION CLASS [1]	OCCUPATIONAL NON-FATAL INJURY RATE [1] (death rate / person-yr)	ALTERNATIVE											
			Alt. E			Alt. F1			Alt. F2			Alt. F3		
			Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate
Leverman	Water transportation	3.44E-02	156,286	4.65	1.60E-03	32,263	4.47	1.54E-03	38,037	4.33	1.49E-03	41,063	4.48	1.54E-03
Mate	Water transportation	3.44E-02	76,260	2.27	7.80E-04	13,878	1.92	6.61E-04	18,366	2.09	7.20E-04	22,774	2.48	8.55E-04
Captain (Tug)	Water transportation	3.44E-02	156,286	4.65	1.60E-03	37,454	5.19	1.78E-03	43,310	4.93	1.70E-03	46,430	5.07	1.74E-03
Deckhand	Water transportation	3.44E-02	311,293	9.26	3.18E-03	74,827	10.36	3.57E-03	86,461	9.85	3.39E-03	92,699	10.11	3.48E-03
Mechanic	Construction	3.18E-02	2,560	0.08	2.42E-05	160	0.02	7.05E-06	320	0.04	1.16E-05	320	0.03	1.11E-05
Operator	Construction	3.18E-02	880,074	26.17	8.32E-03	157,905	21.87	6.95E-03	202,134	23.02	7.32E-03	207,255	22.61	7.19E-03
Superintendent	Construction	3.18E-02	271,843	8.08	2.57E-03	54,385	7.53	2.40E-03	69,161	7.88	2.50E-03	76,687	8.37	2.66E-03
Surveyor	Construction	3.18E-02	312,573	9.30	2.96E-03	74,907	10.37	3.30E-03	86,621	9.87	3.14E-03	92,859	10.13	3.22E-03
Engineer	Construction	3.18E-02	264,615	7.87	2.50E-03	61,263	8.49	2.70E-03	71,661	8.16	2.60E-03	78,038	8.51	2.71E-03
Project Manager	Construction	3.18E-02	185,638	5.52	1.76E-03	35,583	4.93	1.57E-03	39,034	4.45	1.41E-03	40,001	4.36	1.39E-03
Operations Manager	Construction	3.18E-02	528	0.02	4.99E-06	528	0.07	2.33E-05	528	0.06	1.91E-05	528	0.06	1.83E-05
Laborer	Construction	3.18E-02	744,666	22.15	7.04E-03	178,861	24.77	7.88E-03	222,406	25.33	8.05E-03	217,943	23.78	7.56E-03
Total Estimated Hours			3,362,622	100.00		722,014	100.00		878,039	100.00		916,597	100.00	
Weighted Death Rate / person-yr					**3.23E-02**			**3.24E-02**			**3.24E-02**			**3.24E-02**
Total Estimated Time (person-years) [3]			1,401			301			366			382		
Mean No. of Non-Fatal Injuries [4]					**4.53E+01**			**9.74E+00**			**1.18E+01**			**1.24E+01**
Risk of at least one non-fatal injury [5]					**1.00E+00**			**1.00E+00**			**1.00E+00**			**1.00E+00**

TABLE A.2
REMEDIATION WORKER NON-FATAL INJURY RISK ESTIMATES FOR LAKE-WIDE ALTERNATIVES

REMEDIATION LABOR CATEGORY	ASSUMED OCCUPATION CLASS [1]	OCCUPATIONAL NON-FATAL INJURY RATE [1] (death rate / person-yr)	ALTERNATIVE														
			Alt. F4			Alt. G			Alt. H			Alt. I			Alt. J		
			Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate	Estimated Hours [2]	% Hours Distribution	Weighted Rate
Leverman	Water transportation	3.44E-02	45,311	4.45	1.53E-03	49,703	4.42	1.52E-03	53,155	4.46	1.53E-03	171,946	4.70	1.62E-03	313,998	5.05	1.74E-03
Mate	Water transportation	3.44E-02	26,306	2.58	8.89E-04	29,938	2.66	9.16E-04	31,578	2.65	9.11E-04	82,507	2.25	7.75E-04	135,420	2.18	7.49E-04
Captain (Tug)	Water transportation	3.44E-02	50,690	4.98	1.71E-03	55,094	4.90	1.69E-03	58,626	4.92	1.69E-03	171,946	4.70	1.62E-03	313,998	5.05	1.74E-03
Deckhand	Water transportation	3.44E-02	101,059	9.92	3.41E-03	109,867	9.78	3.36E-03	116,931	9.81	3.37E-03	342,451	9.36	3.22E-03	625,756	10.07	3.46E-03
Mechanic	Construction	3.18E-02	640	0.06	2.00E-05	640	0.06	1.81E-05	640	0.05	1.71E-05	2,880	0.08	2.50E-05	4,480	0.07	2.29E-05
Operator	Construction	3.18E-02	233,201	22.90	7.28E-03	262,545	23.36	7.43E-03	276,625	23.20	7.38E-03	943,919	25.79	8.20E-03	1,471,177	23.67	7.53E-03
Superintendent	Construction	3.18E-02	86,854	8.53	2.71E-03	98,240	8.74	2.78E-03	104,141	8.74	2.78E-03	296,145	8.09	2.57E-03	505,824	8.14	2.59E-03
Surveyor	Construction	3.18E-02	101,379	9.96	3.17E-03	110,187	9.80	3.12E-03	117,251	9.83	3.13E-03	343,891	9.40	2.99E-03	627,996	10.10	3.21E-03
Engineer	Construction	3.18E-02	85,256	8.37	2.66E-03	93,160	8.29	2.64E-03	97,867	8.21	2.61E-03	288,920	7.89	2.51E-03	493,717	7.94	2.53E-03
Project Manager	Construction	3.18E-02	42,186	4.14	1.32E-03	44,529	3.96	1.26E-03	47,112	3.95	1.26E-03	200,603	5.48	1.74E-03	337,186	5.42	1.73E-03
Operations Manager	Construction	3.18E-02	528	0.05	1.65E-05	528	0.05	1.49E-05	528	0.04	1.41E-05	528	0.01	4.59E-06	528	0.01	2.70E-06
Laborer	Construction	3.18E-02	244,960	24.05	7.65E-03	269,382	23.97	7.62E-03	287,756	24.14	7.68E-03	814,246	22.25	7.07E-03	1,385,339	22.29	7.09E-03
Total Estimated Hours			1,018,370	100.00		1,123,813	100.00		1,192,210	100.00		3,659,982	100.00		6,215,419	100.00	
Weighted Death Rate / person-yr					**3.24E-02**			**3.24E-02**			**3.24E-02**			**3.23E-02**			**3.24E-02**
Total Estimated Time (person-years) [3]			424			468			497			1,525			2,590		
Mean No. of Non-Fatal Injuries [4]					**1.37E+01**			**1.52E+01**			**1.61E+01**			**4.93E+01**			**8.39E+01**
Risk of at least one non-fatal injury [5]					**1.00E+00**			**1.00E+00**			**1.00E+00**			**1.00E+00**			**1.00E+00**

NOTES:

1. Based on Bureau of Labor Statistics (BLS, 1999-2001). Reported non-fatal injury/illness incidence rates from 1999 through 2001 were averaged.
Incidence rates by occupation were not available from BLS for non-fatal statistics; therefore, numbers available for the construction and water transportation categories were used.
2. Worker-hour estimates obtained from Appendix F, cost estimates.
3. The equivalent total manpower requirement for the remedy based on a workweek of 16 hours/day, 5 day/week, for 30 weeks/yr.
4. Mean number = (total estimated time) x (weighted injury rate)
5. Risk estimate is the probability of at least one non-fatal injury occuring assuming a Poisson probability distribution.

APPENDIX I

ATTACHMENT B

TRANSPORTATION ACCIDENT ANALYSIS

TABLE B.1

PREDICTED INCIDENCE OF TRANSPORTATION RELATED FATALITIES AND NON-FATAL INJURIES FOR CONSOLIDATION OF DREDGE MATERIAL AT ON-SITE FACILITIES

Option	In-place dredge volume[1] (cy)	Volume of material for construction of SCA[5] (cy)	Truck-miles for transporting dredged material[2]	Truck-miles for transporting SCA construction material[3]	Fatality rates[4]	Predicted incidence of fatalities	Non-fatal injury rates[4]	Predicted incidence of non-fatal injuries	Risk of at least one fatality[6]	Risk of at least one non-fatal injury[6]
1	100,000	375,273	0	1,313,062	2.80E-08	3.68E-02	7.20E-07	9.45E-01	3.61E-02	6.11E-01
2	500,000	1,258,180	0	4,402,309	2.80E-08	1.23E-01	7.20E-07	3.17E+00	1.16E-01	9.58E-01
3	1,000,000	2,404,049	0	8,411,648	2.80E-08	2.36E-01	7.20E-07	6.06E+00	2.10E-01	9.98E-01
4	10,000,000	18,532,856	0	64,845,542	2.80E-08	1.82E+00	7.20E-07	4.67E+01	8.37E-01	1.00E+00
5	20,000,000	34,800,953	0	121,766,805	2.80E-08	3.41E+00	7.20E-07	8.77E+01	9.67E-01	1.00E+00

Notes

1. For the on-site disposal option, it is assumed that the wastebeds can accommodate the entire dredged volume.

2. Hydraulically dredged material is conveyed directly by pipeline to SCA. Therefore, truck-miles for transporting dredged material equals zero.

3. Assumes that suppliers of SCA construction material are located within a 25 mile radius of the site.
Assumes a truck capacity of 20 tons/truck and 1.4 tons/cy.

4. Fatality and non-fatal injury rates specific to Onondaga County and New York state were not available from NYS DOT. Therefore, average accident rates for large trucks between 1992 and 2001 for occupants and others (e.g. pedestrians) based on Large Truck Crash Facts 2001, Analysis Division Federal Motor Carrier Safety Administration, January 2003, was used in these estimates.

5. For Option 5, volume of material for construction of SCA is assumed to be the same volume as for lakewide alternative J.

6. Risk estimate is the probability of at least one fatality (or non-fatal injury) occuring assuming a Poisson probability distribution.

TABLE B.2

PREDICTED INCIDENCE OF TRANSPORTATION RELATED FATALITIES AND NON-FATAL INJURIES FOR DISPOSAL OF DREDGED MATERIAL AT OFF-SITE FACILITIES

Option	In-place dredge volume[1]	Disposal volume[6]	Volume of lime for solidification[5]	Volume of material for construction of process area[7]	Disposal facility	Disposal facility	Distance from site to disposal facility I	Distance from site to disposal facility II	Truck-miles for transporting dredged material[2]	Truck-miles for transporting lime[3]	Truck-miles for transporting process area construction material[3]	Fatality rates[4]	Fatal accident frequency	Non-fatal injury rates[4]	Non-fatal accident frequency	Risk of at least one fatality[8]	Risk of at least one non-fatal injury[8]
	(cy)	(cy)	(cy)	(cy)	I	II	(miles)	(miles)				Truck	Truck	Truck	Truck		
1	100,000	115,000	10,000	37,938	High Acres, Fairport, NY	Niagara Falls, Pine Avenue	80	165	1,971,659	34,990	132,743	2.80E-08	5.99E-02	7.20E-07	1.54E+00	5.81E-02	7.86E-01
2	500,000	575,000	50,000	37,938	High Acres, Fairport, NY	Niagara Falls, Pine Avenue	80	165	9,858,293	174,948	132,743	2.80E-08	2.85E-01	7.20E-07	7.32E+00	2.48E-01	9.99E-01
3	1,000,000	1,150,000	100,000	37,938	High Acres, Fairport, NY	Niagara Falls, Pine Avenue	80	165	19,716,585	349,895	132,743	2.80E-08	5.66E-01	7.20E-07	1.45E+01	4.32E-01	1.00E+00
4	10,000,000	11,500,000	1,000,000	37,938	American Landfill	Atlantic Waste Disposal	390	525	736,354,094	3,498,950	132,743	2.80E-08	2.07E+01	7.20E-07	5.33E+02	1.00E+00	1.00E+00
5	20,000,000	23,000,000	2,000,000	37,938	American Landfill	Atlantic Waste Disposal	390	525	1,472,708,188	6,997,901	132,743	2.80E-08	4.14E+01	7.20E-07	1.07E+03	1.00E+00	1.00E+00

Notes

1. All dredged material is assumed to be non-hazardous.

2. Assumes a truck capacity of 20 tons/truck and 1.4 tons/cy.

3. Assumes that suppliers of process area construction material and lime are located within a 25 mile radius from the site.

4. Average accident rates for large trucks between 1992 and 2001 for occupants and others (e.g. pedestrians)
based on Large Truck Crash Facts 2001, Analysis Division Federal Motor Carrier Safety Administration, January 2003.

5. Volume of lime added for solidification is 10% of the in-place dredge volume.

6. Disposal volume equals 1.15 times the in-place dredge volume due to dewatering and solidification.

7. Quantities obtained from App. K, sediment management and water treatment cost estimates.

8. Risk estimate is the probability of at least one fatality (or non-fatal injury) occuring assuming a Poisson probability distribution.

TABLE B.3

PREDICTED INCIDENCE OF TRANSPORTATION RELATED FATALITIES AND NON-FATAL INJURIES: COMPARISON OF LAKEWIDE ALTERNATIVES

Alternative	In-place dredge volume[1] (cy)	Volume of capping material[1] (cy)	Volume of backfill material[1] (cy)	Volume of material for construction of SCA[1] (cy)	Truck-miles for transporting dredged material[2]	Truck-miles for transporting capping material[3]	Truck-miles for transporting backfill material[3]	Truck-miles for transporting SCA construction material[3]	Fatality rates[4]	Predicted incidence of fatalities	Non-fatal injury rates[4]	Predicted incidence of non-fatal injuries	Risk of at least one fatality[5]	Risk of at least one non-fatal injury[5]
B	223,000	2,158,331	0	640,463	0	7,551,893	0	2,240,948	2.80E-08	2.74E-01	7.20E-07	7.05E+00	2.40E-01	9.99E-01
C	543,000	2,249,251	0	1,350,930	0	7,870,017	0	4,726,837	2.80E-08	3.53E-01	7.20E-07	9.07E+00	2.97E-01	1.00E+00
D	881,000	2,121,551	0	2,131,140	0	7,423,202	0	7,456,753	2.80E-08	4.17E-01	7.20E-07	1.07E+01	3.41E-01	1.00E+00
D2	1,180,000	2,371,551	0	2,856,958	0	8,297,939	0	9,996,354	2.80E-08	5.12E-01	7.20E-07	1.32E+01	4.01E-01	1.00E+00
E	11,247,000	11,831	7,590,500	20,185,241	0	41,396	26,558,782	70,627,155	2.80E-08	2.72E+00	7.20E-07	7.00E+01	9.34E-01	1.00E+00
F1	1,207,000	2,531,020	0	2,856,958	0	8,855,913	0	9,996,354	2.80E-08	5.28E-01	7.20E-07	1.36E+01	4.10E-01	1.00E+00
F2	1,868,000	2,660,707	0	4,429,331	0	9,309,682	0	15,498,009	2.80E-08	6.95E-01	7.20E-07	1.79E+01	5.01E-01	1.00E+00
F3	2,419,000	2,547,020	0	5,544,607	0	8,911,896	0	19,400,304	2.80E-08	7.93E-01	7.20E-07	2.04E+01	5.47E-01	1.00E+00
F4	2,947,000	2,604,507	0	6,655,615	0	9,113,041	0	23,287,666	2.80E-08	9.07E-01	7.20E-07	2.33E+01	5.96E-01	1.00E+00
G	3,490,000	2,683,098	0	7,984,665	0	9,388,027	0	27,937,946	2.80E-08	1.05E+00	7.20E-07	2.69E+01	6.48E-01	1.00E+00
H	3,724,000	2,856,001	0	8,426,865	0	9,993,006	0	29,485,182	2.80E-08	1.11E+00	7.20E-07	2.84E+01	6.69E-01	1.00E+00
I	12,184,000	366,000	8,186,500	21,830,102	0	1,280,616	28,644,157	76,382,442	2.80E-08	2.98E+00	7.20E-07	7.65E+01	9.49E-01	1.00E+00
J	20,121,000	2,861,880	14,618,000	34,800,953	0	10,013,576	51,147,656	121,766,805	2.80E-08	5.12E+00	7.20E-07	1.32E+02	9.94E-01	1.00E+00

Notes

1. Quantities obtained from Appendix K.

2. Hydraulically dredged material is conveyed directly by pipeline to SCA. Therefore, truck-miles for transporting dredged material equals zero.

3. Assumes that suppliers of capping material, backfill material, and SCA construction material are located within a 25 mile radius of the site.
Assumes a truck capacity of 20 tons/truck and 1.4 tons/cy.

4. Fatality and non-fatal injury rates specific to Onondaga County and New York state were not available from NYS DOT. Therefore, average accident rates for large trucks between 1992 and 2001 for occupants and others (e.g. pedestrians) based on Large Truck Crash Facts 2001, Analysis Division Federal Motor Carrier Safety Administration, January 2003, was used in these estimates.

5. Risk estimate is the probability of at least one fatality (or non-fatal injury) occuring assuming a Poisson probability distribution.

TABLE B.4

TRUCK VOLUMES ASSOCIATED WITH TRANSPORT OF SCA CONSTRUCTION, CAPPING, AND BACKFILL MATERIALS TO THE SITE

Alternative	Volume of material for construction of SCA (cy)	Volume of capping material	Volume of backfill material	Number of trucks transporting SCA construction material	Number of trucks transporting capping and backfill material
B	640,463	2,158,331	0	44,832	151,083
C	1,350,930	2,249,251	0	94,565	157,448
D	2,131,140	2,121,551	0	149,180	148,509
D2	2,856,958	2,371,551	0	199,987	166,009
E	20,185,241	11,831	7,590,500	1,412,967	532,163
F1	2,856,958	2,531,020	0	199,987	177,171
F2	4,429,331	2,660,707	0	310,053	186,249
F3	5,544,607	2,547,020	0	388,122	178,291
F4	6,655,615	2,604,507	0	465,893	182,315
G	7,984,665	2,683,098	0	558,927	187,817
H	8,426,865	2,856,001	0	589,881	199,920
I	21,830,102	366,000	8,186,500	1,528,107	598,675
J	34,800,953	2,861,880	14,618,000	2,436,067	1,223,592

Notes
Assumes a truck capacity of 20 tons/truck and 1.4 tons/cy.

APPENDIX I

ATTACHMENT C

DREDGED MATERIAL ROUTING AND TRAVEL DISTANCES TO CANDIDATE OFF-SITE DISPOSAL FACILITIES

REVIEW OF SENSITIVE RECEPTORS ALONG TRANSPORTATION CORRIDORS

APPENDIX I

ATTACHMENT C

DREDGED MATERIAL ROUTING AND TRAVEL DISTANCES TO CANDIDATE OFF-SITE DISPOSAL FACILITIES

REVIEW OF SENSITIVE RECEPTORS ALONG TRANSPORTATION CORRIDORS

C.1 TRUCK ROUTES

As described in Subsection I.2.3.2.1, for scenarios with a dredged volume of less than or equal to 1,000,000 for off-site disposal, 50 percent of the dredged material was assumed to be disposed of at the High Acres facility in Fairport, NY, and the remaining 50 percent disposed of at Pine Avenue Landfill in Niagara Falls, NY. For the 10,000,000 dredged volume scenario, 50 percent of the dredged volume was assumed to be disposed of at American Landfill in Waynesburg, OH, and 50 percent at Atlantic Waste Disposal in Waverly, VA. Truck routes from the site to these facilities are listed below.

C.1.1 Truck Route to High Acres, Fairport, New York (Expedia.com, 2004)

- Less than 1 mile on State Fair Blvd (North-West)
- 0.1 miles right onto ramp (I-690/Rt. 695)
- 4.3 miles on I-690 to exit 1, turn right onto ramp (I-90/Thruway)
- 0.5 miles on ramp (stay left)
- 0.1 miles on ramp to I-90/Buffalo
- 50.2 miles on I-90 to exit 43 (Gov Thomas E Dewey Throughway)
- 0.9 miles on ramp (right) to RT-21/Manchester/Palmyra
- 6.2 miles on SR-21
- 0.7 miles turn left (west) onto SR-31
- 6.1 miles on SR-31
- 1.5 miles turn right (north) onto SR-306 (Wayneport Road)
- 0.5 miles turn left (west) onto Budlong Road

- 0.6 miles on Budlong Road/Perinton Parkway
- Less than 0.1 miles on Perinton Parkway to High Acres Landfill.

The total trip one-way is 73.4 miles.

C.1.2 Truck Route to American Landfill Waynesburg, Ohio (Expedia.com 2004)

- Less than 1 mile on State Fair Blvd (North-West)
- 0.1 miles right onto ramp (I-690/Rt. 695)
- 4.3 miles on I-690 to exit 1, turn right onto ramp (I-90/Thruway)
- 0.5 miles on ramp (stay left)
- 0.1 miles on ramp to I-90/Buffalo
- 130 miles on I-90, merge onto I-90(Gov Thomas E Dewey Throughway)
- 10.6 miles on I-90 (Gov Thomas E Dewey Throughway) West
- 64.4 miles on I-90 (Gov Thomas E Dewey Throughway) South
- 25.7 miles to Exit 61, stay on I-90 (Gov Thomas E Dewey Throughway) (South-West)
- 61 miles to Exit 22A, take ramp (right) onto I-79 (Raymond P Shafer Hwy) (I-79/Pittsburgh)
- 32.4 miles to Exit 116B, take ramp (right) onto I-80 (ZH Confair Memorial Hwy) (I-80/Sharon)
- 25.8 miles to Exit 224, take ramp (left) onto SR-11 (Oh/Canfield)
- 0.2 miles on Oh/11 Canfield, turn right onto ramp (Oh/154/US-30 W/Rodgers /Lisbon)
- 1.7 miles on ramp turn right onto SR-154
- 11.5 miles on SR-154, turns into US-30
- 8.4 miles turn right onto US-30
- 0.1 miles turn left onto SR-183 (N Market St)
- 0.1 miles straight onto SR-183 (S Market St)
- 0.1 miles on SR-183 (S Market St), bear right onto SR-183 (W McKinley St)
- 0.6 miles on SR-183 (W McKinley St), bear left onto SR-183 (Valley St)
- 8.8 miles on Valley St, bear right onto SR-183
- 0.2 miles on SR-183, turn right onto SR-43 (Waynesburg Dr SE)

- less than 0.1 miles on Waynesburg Dr SE, keep right onto SR-44
- 2.1 miles on SR-44 (Ravenna Ave SE)
- 0.3 miles on SR-44, turn left onto Chapel St SE
- Less than 0.1 miles arrive at American Landfill

The total trip one-way is 391 miles.

C.1.3 Truck Route to Pine Avenue Landfill in Niagara Falls, New York

- Less than 1 mile on State Fair Blvd (North-West)
- 0.1 miles right onto ramp (I-690/Rt. 695)
- 4.3 miles on I-690 to exit 1, turn right onto ramp (I-90/Thruway)
- 0.5 miles on Ramp (stay left)
- 0.1 miles on ramp to I-90/Buffalo
- 130 miles on I-90, merge onto I-90 (Gov Thomas E Dewey Throughway)
- 0.4 miles on I-90 (Gov Thomas E Dewey Throughway) (West)
- 9.8 miles to Exit 50, take ramp onto I-290 (Youngmann Expy) (I-290/Niagara Falls)
- 0.4 miles on ramp to I-90/Niaraga Falls
- 7.5 miles, merge onto I-190 (Gov Thomas E Dewey Throughway)
- 1.0 miles on I-190 (Gov Thomas E Dewey Throughway) to Exit 21, stay on I-190 (Niagara Expy) (North)
- 0.1 miles to Exit 22, turn right onto ramp for US-62 /Niagara Falls Blvd /Airport)
- 0.5 miles turn left onto US-62 (Niagara Falls Blvd)
- Less than 0.1 miles arrive at Pine Avenue Landfill in Niagara Falls, New York

The total trip one-way is 158 miles.

C.1.4 Truck Route to Atlantic Waste Disposal in Waverly, Virginia

- 0.3 miles on CR-80 (State Fair Blvd) (South-East)
- 0.1 miles on CR-80, turn left onto SR-297
- 2.5 miles on I-690
- 124 miles on I-81/Binghamton to Exit 194 (Pennsylvania Turnpike/US-6/US-11/Clarks Summit)

- 0.2 miles on ramp to Clarks Summit Interchange (Pennsylvania Turnpike/US-6/US11/ Clarks Summit)
- 0.1 miles on ramp to I-476/Pennsylvania Turnpike/Allentown)
- 112 miles on I-476/Pennsylvania Turnpike Northeast Extension (South)
- 19.4 miles on I-476 (Blue Route) (South)
- 6.9 miles to I-95 (Chester) Ramp
- 0.2 miles to Exit 11, turn right onto Ramp for I-495/Port of Wilmington/Baltimore)
- 11.4 miles to Exit 6, turn left onto ramp onto I-495 (Vietnam Veterans Memorial Hwy)
- 10.7 miles on I-495, merge onto I-95 (US-202)
- 1.3 miles until toll booth, stay on I-95 (Delaware Tpke)
- 48.2 miles on I-95 (John F Kennedy Memorial Hwy)
- 15.1 miles on I-895 (Harbor Tunnel Throughway/Annapolis/Bay Bridge)
- 18.2 miles, merge back onto I-95
- 0.4 miles to Exit 27-25, turn right onto I-495/US-1/College Park/Silver Spring) ramp
- Take Exit 27 I-495/Silver Spring
- 30.1 miles on I-495/Silver Spring
- 85.1 miles on I-495 to Exit 57A for I-95/Richmond
- 26.9 miles on I-95 to Exit 84A for I-295/Rocky Mt NC
- 14.2 miles on I-295 to Exit 3A US-450/Norfolk
- 9.8 miles to Exit 3A on US-450/Norfolk
- 1 mile, turn right onto Alden Road
- 1.7 miles road name changes to SR-624
- 0.1 miles, turn left onto SR-602
- 0.4 miles, turn right onto Atlantic Lane
- Less than 0.1 miles arrive at Atlantic Waste

The total trip one-way is 540 miles.

C.2 REVIEW OF SENSITIVE RECEPTORS

Sensitive receptors such as swamps, wildlife reserves, parks, wetlands, rivers, and lakes located along the transportation route to the candidate off-site disposal facilities were investigated. The United States Geological Survey (USGS) Topographical Quadrangle Maps (1984) were used to determine the location of sensitive receptors.

C.2.1 Sensitive Receptors Enroute to High Acres, Fairport, New York

Sensitive receptors along this transportation corridor identified on the 1984 USGS topographical quadrangle maps for New York were as follows:

- McGraw Swamp – Onondaga County near Jordan, New York (Syracuse, NY Quad)
- Montezuma National Wildlife Reserve – Seneca County near Montezuma, New York (Syracuse, New York Quad)
- Hozzey Swamp – Ontario County near Farmington, New York (Canandaigua, NY Quad)

C.2.2 Sensitive Receptors Enroute to Pine Avenue Landfill in Niagara Falls, New York

Sensitive receptors along this transportation corridor identified on the 1984 USGS topographical quadrangle maps for New York were as follows:

- McGraw Swamp – Onondaga County near Jordan, New York (Syracuse, NY Quad)
- Montezuma National Wildlife Reserve – Seneca County near Montezuma, New York (Syracuse, NY Quad)
- Hozzey Swamp – Ontario County near Farmington, New York (Canandaigua, NY Quad)
- Mendon Ponds Park – Monroe County near Henrietta, New York (Rochester, NY Quad)
- Tillman Road State Wildlife Management – Erie County near Millgrove, New York (Buffalo, NY Quad)

C.2.3 Sensitive Receptors Enroute to American Landfill, Waynesburg, Ohio

Sensitive receptors along this transportation corridor identified on the 1984 USGS topographical quadrangle maps for New York, Pennsylvania, and Ohio were as follows:

- McGraw Swamp – Onondaga County near Jordan, New York (Syracuse, NY Quad)
- Montezuma National Wildlife Reserve – Seneca County near Montezuma, New York (Syracuse, NY Quad)

- Hozzey Swamp – Ontario County near Farmington, New York (Canandaigua, NY Quad)
- Mendon Ponds Park – Monroe County near Henrietta, New York (Rochester, NY Quad)
- Salem Reservoir – Columbia County near Lisbon, Ohio (Canton, OH Quad)
- Guilford Lake – Columbia County near New Garden, Ohio (Canton, OH Quad)
- Lake Mohawk –Carroll County Waynesburg, Ohio (Canton, OH Quad)

C.2.4 Sensitive Receptors Enroute to Atlantic Waste Disposal in Waverly, Virginia

Sensitive receptors along this transportation corridor identified on the 1984 USGS topographical quadrangle maps for New York, Pennsylvania, Maryland, and Virginia were as follows:

- Tully Lake and wetlands – Onondaga and Cortland County, New York (Auburn, NY Quad)
- Whitney Point Park – Broome County near Whitney Point, New York (Cortland, NY Quad)
- Hickory Run State Park – Carbon County near White Haven, Pennsylvania (Allentown, PA Quad)
- PA State Game Lands No. 141 – Carbon County near White Haven, Pennsylvania (Allentown, PA Quad)
- Savage Park – Montgomery County near Savage, Maryland (Baltimore, MD Quad)
- Fairland Regional Park – Montgomery County near Savage, Maryland (Baltimore, MD Quad)
- Potomac River – Henrico County near Richmond, Virginia (Washington West, VA Quad)
- James River – Prince George County near Petersburg, Virginia (Washington West, VA Quad)

APPENDIX I

ATTACHMENT D

WATER AND AIR RISK CALCULATIONS ASSOCIATED WITH DREDGING

(Place CD Here)

ATTACHMENT D

WATER AND AIR RISK CALCULATIONS ASSOCIATED WITH DREDGING

This attachment contains two sets of calculations, water quality impact calculations and air risk calculations. One calculation file for each SMU in each lake-wide alternative is included for water quality impact calculations. Air risk calculations are summarized into two files, long-term and short-term. Estimates of long-term and short-term risks from air emissions caused by processing the sediments from each lake-wide alternative or by SCA or via solidification on a mixing pad are included. Long-term and short-term air risks from the point of dredge were calculated for Lake-Wide Alternative J only.

The following calculations are included:

WORKBOOKS - WATER QUALITY IMPACTS

Workbook Alt C SMU 1
Workbook Alt C SMU 2
Workbook Alt C SMU 3
Workbook Alt C SMU 6

Workbook Alt D SMU 1
Workbook Alt D SMU 2
Workbook Alt D SMU 3
Workbook Alt D SMU 4
Workbook Alt D SMU 6

Workbook Alt D2 SMU 1
Workbook Alt D2 SMU 2
Workbook Alt D2 SMU 3
Workbook Alt D2 SMU 4
Workbook Alt D2 SMU 5
Workbook Alt D2 SMU 6
Workbook Alt D2 SMU 7

Workbook Alt E SMU 1
Workbook Alt E SMU 2
Workbook Alt E SMU 3
Workbook Alt E SMU 4
Workbook Alt E SMU 6
Workbook Alt E SMU 7

Workbook Alt F1 SMU 1
Workbook Alt F1 SMU 2
Workbook Alt F1 SMU 3
Workbook Alt F1 SMU 4
Workbook Alt F1 SMU 5
Workbook Alt F1 SMU 6
Workbook Alt F1 SMU 7

Workbook Alt F2 SMU 1
Workbook Alt F2 SMU 2
Workbook Alt F2 SMU 3
Workbook Alt F2 SMU 4
Workbook Alt F2 SMU 5
Workbook Alt F2 SMU 6
Workbook Alt F2 SMU 7

Workbook Alt F3 SMU 1
Workbook Alt F3 SMU 2
Workbook Alt F3 SMU 3
Workbook Alt F3 SMU 4
Workbook Alt F3 SMU 5
Workbook Alt F3 SMU 6
Workbook Alt F3 SMU 7

Workbook Alt F4 SMU 1
Workbook Alt F4 SMU 2
Workbook Alt F4 SMU 3
Workbook Alt F4 SMU 4
Workbook Alt F4 SMU 5
Workbook Alt F4 SMU 6
Workbook Alt F4 SMU 7

Workbook Alt G SMU 1
Workbook Alt G SMU 2
Workbook Alt G SMU 3
Workbook Alt G SMU 4
Workbook Alt G SMU 5
Workbook Alt G SMU 6
Workbook Alt G SMU 7

Workbook Alt H SMU 1
Workbook Alt H SMU 2
Workbook Alt H SMU 3
Workbook Alt H SMU 4
Workbook Alt H SMU 5
Workbook Alt H SMU 6
Workbook Alt H SMU 7

Workbook Alt I SMU 1
Workbook Alt I SMU 2
Workbook Alt I SMU 3
Workbook Alt I SMU 4
Workbook Alt I SMU 5
Workbook Alt I SMU 6
Workbook Alt I SMU 7

Workbook Alt J SMU 1
Workbook Alt J SMU 2
Workbook Alt J SMU 3
Workbook Alt J SMU 4
Workbook Alt J SMU 5
Workbook Alt J SMU 6
Workbook Alt J SMU 7

WORKBOOKS - AIR RISK CALCULATIONS

Long Term Air Risk Summary
Short Term Air Risk Summary

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative B, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide B
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	28	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	113,312	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.0E-03	3.9E-02	5.0E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.5E-05	5.9E-04	7.5E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.0E-06	6.8E-05	9.0E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.2E-04	4.9E-03	6.2E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	7.9E-04	6.0E-03	7.9E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.4E-04	6.6E-03	8.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide B
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	28	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	113,312	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide B
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	28	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	113,312	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative B, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide B
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	28	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	113,312	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		205		7		5		5	
Benzene	1.77	0.340	0.340	0.263	0.263	0.263	0.263	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.015	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.042	0.042	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.032	0.032	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.026	0.026	0.026	0.026	0.026	0.026	0.001	0.001

SMU (Insert Value: 1 through 7): 6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide B
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10.6
Total dredge volume in cy: 148,000
Dredge cut in feet (either average or to max conc): 8.7
Post-dredge water depth (either average or to max conc.) in feet: 8

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 987

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 40%
Specific gravity: 2.6
TOC: 1.9%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029
% volatilized during mixing 80.0 Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing 100.0 for all SMU sediments
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 28 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 113,312

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				42	5		
Benzene	0.09	100		3.8E-03	4.9E-04	3.8E-03	4.9E-04
Benzo[a]pyrene	1.56	1,096,478		6.5E-02	8.5E-03	5.8E-02	8.3E-03
Chlorobenzene	0.33	500		1.4E-02	1.8E-03	1.4E-02	1.8E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	2,399		1.9E-02	2.4E-03	1.9E-02	2.4E-03
Ethylbenzene	0.21	588		8.7E-03	1.1E-03	8.7E-03	1.1E-03
Fluorene	1.24	15,136		5.2E-02	6.7E-03	5.1E-02	6.7E-03
Hexachlorobenzenes	0.02	1,513,561		9.3E-04	1.2E-04	8.3E-04	1.2E-04
Naphthalene	2.83	2,344		1.2E-01	1.5E-02	1.2E-01	1.5E-02
Phenanthrene	5.51	342,748		2.3E-01	3.0E-02	2.1E-01	3.0E-02
Phenol	0.06	100		2.6E-03	3.4E-04	2.6E-03	3.4E-04
Polychlorinated biphenyls	0.89	1,380,384		3.7E-02	4.8E-03	3.3E-02	4.7E-03
Pyrene	3.67	208,930		1.5E-01	2.0E-02	1.4E-01	2.0E-02
Toluene	0.08	490		3.2E-03	4.2E-04	3.2E-03	4.2E-04
Total mercury (methyl mercury for air emissions)	2.24	366,368	6,961	9.3E-02	1.2E-02	8.5E-02	1.2E-02
Trichlorobenzenes	0.38	18,197		1.6E-02	2.1E-03	1.6E-02	2.1E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	1.7E-03	1.3E-02	1.7E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide B
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	28	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	113,312	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	9.0E-02	9.0E-02
Benzo[a]pyrene	1.6E+00	1.6E+00
Chlorobenzene	3.3E-01	3.3E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	4.5E-01	4.5E-01
Ethylbenzene	2.1E-01	2.1E-01
Fluorene	1.2E+00	1.2E+00
Hexachlorobenzenes	2.2E-02	2.2E-02
Naphthalene	2.8E+00	2.8E+00
Phenanthrene	5.5E+00	5.5E+00
Phenol	6.3E-02	6.3E-02
Polychlorinated biphenyls	8.9E-01	8.9E-01
Pyrene	3.7E+00	3.7E+00
Toluene	7.7E-02	7.7E-02
Total mercury (methyl mercury for air emissions)	2.2E+00	2.2E+00
Trichlorobenzenes	3.8E-01	3.8E-01
Xylene isomers (total)	3.2E-01	3.2E-01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative B, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide B
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing	100.0	for all SMU sediments
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	28	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	113,312	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.09	9.0E+00	7.9E+00	7.8E+00	7.6E+00	7.9E+00	7.8E+00
Benzo[a]pyrene	1.56	1.6E+02	4.7E-01	4.7E-01	5.6E-01	3.6E-01	3.6E-01
Chlorobenzene	0.33	3.3E+01	1.8E+01	1.7E+01	1.7E+01	1.7E+01	1.7E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	4.5E+01	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Ethylbenzene	0.21	2.1E+01	1.0E+01	1.0E+01	9.9E+00	1.0E+01	1.0E+01
Fluorene	1.24	1.2E+02	4.6E+00	4.6E+00	4.5E+00	4.5E+00	4.5E+00
Hexachlorobenzenes	0.02	2.2E+00	6.4E-03	6.3E-03	7.8E-03	5.0E-03	4.9E-03
Naphthalene	2.83	2.8E+02	5.4E+01	5.4E+01	5.2E+01	5.4E+01	5.4E+01
Phenanthrene	5.51	5.5E+02	2.2E+00	2.2E+00	2.6E+00	1.9E+00	1.8E+00
Phenol	0.06	6.3E+00	5.5E+00	5.5E+00	5.3E+00	5.5E+00	5.5E+00
Polychlorinated biphenyls	0.89	8.9E+01	2.6E-01	2.6E-01	3.1E-01	2.0E-01	2.0E-01
Pyrene	3.67	3.7E+02	1.9E+00	1.9E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.08	7.7E+00	4.1E+00	4.1E+00	4.0E+00	4.1E+00	4.1E+00
Total mercury (methyl mercury for air emissions)	2.24	2.2E+02	8.9E-01	8.9E-01	1.0E+00	7.3E-01	7.3E-01
Trichlorobenzenes	0.38	3.8E+01	1.2E+00	1.2E+00	1.2E+00	1.2E+00	1.2E+00
Xylene isomers (total)	0.32	3.2E+01	8.9E+00	8.9E+00	8.6E+00	8.9E+00	8.8E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative B, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide B
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing	100.0	for all SMU sediments
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	28	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	113,312	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		389		13		9		9	
Benzene	0.09	0.031	0.031	0.024	0.024	0.024	0.024	0.001	0.001
Benzo[a]pyrene	1.56	0.010	0.005	0.010	0.010	0.009	0.000	0.009	0.000
Chlorobenzene	0.33	0.069	0.068	0.069	0.069	0.069	0.069	0.002	0.002
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	0.035	0.034	0.021	0.021	0.020	0.020	0.003	0.003
Ethylbenzene	0.21	0.040	0.040	0.007	0.007	0.007	0.007	0.003	0.003
Fluorene	1.24	0.024	0.022	0.007	0.007	0.007	0.007	0.007	0.007
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.83	0.223	0.219	0.144	0.144	0.144	0.144	0.030	0.030
Phenanthrene	5.51	0.038	0.021	0.038	0.037	0.031	0.031	0.030	0.030
Phenol	0.06	0.022	0.022	0.014	0.014	0.010	0.010	0.003	0.003
Polychlorinated biphenyls	0.89	0.006	0.003	0.006	0.005	0.006	0.006	0.006	0.006
Pyrene	3.67	0.027	0.016	0.027	0.026	0.020	0.020	0.020	0.020
Toluene	0.08	0.016	0.016	0.012	0.012	0.011	0.011	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.24	0.015	0.008	0.014	0.013	0.013	0.013	0.013	0.013
Trichlorobenzenes	0.38	0.007	0.006	0.006	0.006	0.004	0.004	0.003	0.003
Xylene isomers (total)	0.32	0.036	0.035	0.036	0.036	0.036	0.036	0.002	0.002

SMU (Insert Value: 1 through 7): 1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide C
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 36
Total dredge volume in cy: 151,000
Dredge cut in feet (either average or to max conc): 2.6
Post-dredge water depth (either average or to max conc.) in feet: 5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 1,007

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 92%
Specific gravity: 2.36
TOC: 2.0%
In Situ Sediment Density (% solids by weight) 41%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029
% volatilized during mixing 80.0 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 54 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 218,530

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				53	4		
Benzene	2.24	100		1.2E-01	8.3E-03	1.2E-01	8.3E-03
Benzo[a]pyrene	0.61	1,096,478		3.2E-02	2.3E-03	2.8E-02	2.2E-03
Chlorobenzene	41.26	500		2.2E+00	1.5E-01	2.2E+00	1.5E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	49.36	2,399		2.6E+00	1.8E-01	2.6E+00	1.8E-01
Ethylbenzene	2.05	588		1.1E-01	7.6E-03	1.1E-01	7.6E-03
Fluorene	1.25	15,136		6.6E-02	4.7E-03	6.5E-02	4.7E-03
Hexachlorobenzenes	0.44	1,513,561		2.3E-02	1.6E-03	2.0E-02	1.6E-03
Naphthalene	42.24	2,344		2.2E+00	1.6E-01	2.2E+00	1.6E-01
Phenanthrene	2.03	342,748		1.1E-01	7.5E-03	9.5E-02	7.5E-03
Phenol	1.25	100		6.6E-02	4.7E-03	6.6E-02	4.7E-03
Polychlorinated biphenyls	1.81	1,380,384		9.5E-02	6.7E-03	8.2E-02	6.7E-03
Pyrene	1.14	208,930		6.0E-02	4.3E-03	5.5E-02	4.2E-03
Toluene	4.20	490		2.2E-01	1.6E-02	2.2E-01	1.6E-02
Total mercury (methyl mercury for air emissions)	16.37	348,050	6,961	8.6E-01	6.1E-02	7.7E-01	6.0E-02
Trichlorobenzenes	5.94	18,197		3.1E-01	2.2E-02	3.1E-01	2.2E-02
Xylene isomers (total)	28.96	1,413		1.5E+00	1.1E-01	1.5E+00	1.1E-01

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	36
Total dredge volume in cy:	151,000
Dredge cut in feet (either average or to max conc):	2.6
Post-dredge water depth (either average or to max conc.) in feet:	5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,007
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing	100.0	for all SMU sediments
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	2.2E+00	2.2E+00
Benzo[a]pyrene	6.1E-01	6.1E-01
Chlorobenzene	4.1E+01	4.1E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	4.9E+01	4.9E+01
Ethylbenzene	2.0E+00	2.0E+00
Fluorene	1.3E+00	1.3E+00
Hexachlorobenzenes	4.4E-01	4.4E-01
Naphthalene	4.2E+01	4.2E+01
Phenanthrene	2.0E+00	2.0E+00
Phenol	1.3E+00	1.3E+00
Polychlorinated biphenyls	1.8E+00	1.8E+00
Pyrene	1.1E+00	1.1E+00
Toluene	4.2E+00	4.2E+00
Total mercury (methyl mercury for air emissions)	1.6E+01	1.6E+01
Trichlorobenzenes	5.9E+00	5.9E+00
Xylene isomers (total)	2.9E+01	2.9E+01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	36
Total dredge volume in cy:	151,000
Dredge cut in feet (either average or to max conc):	2.6
Post-dredge water depth (either average or to max conc.) in feet:	5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,007
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing	100.0	for all SMU sediments
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	2.24	2.2E+02	1.9E+02	1.9E+02	1.9E+02	1.9E+02	1.9E+02
Benzo[a]pyrene	0.61	6.1E+01	9.5E-02	9.5E-02	2.1E-01	7.4E-02	7.3E-02
Chlorobenzene	41.26	4.1E+03	2.2E+03	2.1E+03	2.1E+03	2.2E+03	2.1E+03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	49.36	4.9E+03	8.9E+02	8.8E+02	8.6E+02	8.9E+02	8.8E+02
Ethylbenzene	2.05	2.0E+02	9.8E+01	9.7E+01	9.4E+01	9.8E+01	9.6E+01
Fluorene	1.25	1.3E+02	4.3E+00	4.2E+00	4.4E+00	4.2E+00	4.1E+00
Hexachlorobenzenes	0.44	4.4E+01	6.3E-02	6.1E-02	1.5E-01	4.8E-02	4.7E-02
Naphthalene	42.24	4.2E+03	7.8E+02	7.6E+02	7.5E+02	7.7E+02	7.6E+02
Phenanthrene	2.03	2.0E+02	5.3E-01	5.2E-01	9.0E-01	4.3E-01	4.2E-01
Phenol	1.25	1.3E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Polychlorinated biphenyls	1.81	1.8E+02	2.6E-01	2.6E-01	6.1E-01	2.0E-01	2.0E-01
Pyrene	1.14	1.1E+02	4.1E-01	4.1E-01	6.1E-01	3.4E-01	3.4E-01
Toluene	4.20	4.2E+02	2.2E+02	2.2E+02	2.1E+02	2.2E+02	2.2E+02
Total mercury (methyl mercury for air emissions)	16.37	1.6E+03	4.2E+00	4.2E+00	7.2E+00	3.4E+00	3.4E+00
Trichlorobenzenes	5.94	5.9E+02	1.7E+01	1.7E+01	1.8E+01	1.7E+01	1.6E+01
Xylene isomers (total)	28.96	2.9E+03	7.9E+02	7.8E+02	7.6E+02	7.9E+02	7.7E+02

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	36
Total dredge volume in cy:	151,000
Dredge cut in feet (either average or to max conc):	2.6
Post-dredge water depth (either average or to max conc.) in feet:	5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,007
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing	100.0	for all SMU sediments
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		335		10		7		7	
Benzene	2.24	0.647	0.647	0.500	0.500	0.500	0.500	0.011	0.011
Benzo[a]pyrene	0.61	0.003	0.001	0.003	0.002	0.002	0.000	0.002	0.000
Chlorobenzene	41.26	7.238	7.214	7.238	7.238	7.239	7.239	0.163	0.163
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	49.36	3.143	3.094	1.909	1.908	1.812	1.812	0.194	0.194
Ethylbenzene	2.05	0.331	0.329	0.059	0.059	0.056	0.056	0.022	0.022
Fluorene	1.25	0.019	0.017	0.005	0.005	0.005	0.005	0.005	0.005
Hexachlorobenzenes	0.44	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Naphthalene	42.24	2.716	2.675	1.743	1.742	1.744	1.744	0.336	0.336
Phenanthrene	2.03	0.009	0.005	0.009	0.009	0.008	0.008	0.008	0.008
Phenol	1.25	0.369	0.369	0.234	0.234	0.165	0.165	0.046	0.046
Polychlorinated biphenyls	1.81	0.008	0.004	0.007	0.007	0.007	0.007	0.007	0.007
Pyrene	1.14	0.006	0.003	0.006	0.005	0.004	0.004	0.004	0.004
Toluene	4.20	0.743	0.740	0.539	0.539	0.497	0.497	0.016	0.016
Total mercury (methyl mercury for air emissions)	16.37	0.074	0.042	0.066	0.065	0.065	0.065	0.063	0.063
Trichlorobenzenes	5.94	0.078	0.071	0.069	0.069	0.052	0.052	0.030	0.030
Xylene isomers (total)	28.96	2.709	2.684	2.683	2.682	2.683	2.683	0.121	0.121

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide C
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10
Total dredge volume in cy: 169,000
Dredge cut in feet (either average or to max conc): 10.7
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 1,127

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 98%
Specific gravity: 2.52
TOC: 1.5%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029
% volatilized during mixing 80.0 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 54 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 218,530

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				19	3		
Benzene	1.80	100		3.4E-02	4.6E-03	3.4E-02	4.6E-03
Benzo[a]pyrene	1.14	1,096,478		2.2E-02	2.9E-03	2.1E-02	2.9E-03
Chlorobenzene	14.29	500		2.7E-01	3.6E-02	2.7E-01	3.6E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	2,399		5.8E-02	7.8E-03	5.8E-02	7.8E-03
Ethylbenzene	1.03	588		1.9E-02	2.6E-03	1.9E-02	2.6E-03
Fluorene	1.57	15,136		3.0E-02	4.0E-03	3.0E-02	4.0E-03
Hexachlorobenzenes	0.02	1,513,561		2.9E-04	3.8E-05	2.7E-04	3.8E-05
Naphthalene	88.57	2,344		1.7E+00	2.3E-01	1.7E+00	2.3E-01
Phenanthrene	5.33	342,748		1.0E-01	1.4E-02	9.8E-02	1.4E-02
Phenol	0.41	100		7.8E-03	1.0E-03	7.8E-03	1.0E-03
Polychlorinated biphenyls	1.33	1,380,384		2.5E-02	3.4E-03	2.4E-02	3.4E-03
Pyrene	2.69	208,930		5.1E-02	6.8E-03	5.0E-02	6.8E-03
Toluene	1.76	490		3.3E-02	4.5E-03	3.3E-02	4.5E-03
Total mercury (methyl mercury for air emissions)	2.03	464,067	6,961	3.8E-02	5.2E-03	3.7E-02	5.1E-03
Trichlorobenzenes	0.37	18,197		7.0E-03	9.4E-04	7.0E-03	9.4E-04
Xylene isomers (total)	11.55	1,413		2.2E-01	2.9E-02	2.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing	100.0	for all SMU sediments
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	1.4E+01	1.4E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E+00	3.0E+00
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	1.6E+00	1.6E+00
Hexachlorobenzenes	1.5E-02	1.5E-02
Naphthalene	8.9E+01	8.9E+01
Phenanthrene	5.3E+00	5.3E+00
Phenol	4.1E-01	4.1E-01
Polychlorinated biphenyls	1.3E+00	1.3E+00
Pyrene	2.7E+00	2.7E+00
Toluene	1.8E+00	1.8E+00
Total mercury (methyl mercury for air emissions)	2.0E+00	2.0E+00
Trichlorobenzenes	3.7E-01	3.7E-01
Xylene isomers (total)	1.2E+01	1.2E+01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing	100.0	for all SMU sediments
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.80	1.8E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02
Benzo[a]pyrene	1.14	1.1E+02	1.9E-01	1.9E-01	5.2E-01	1.6E-01	1.5E-01
Chlorobenzene	14.29	1.4E+03	8.5E+02	8.4E+02	8.2E+02	8.5E+02	8.4E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	3.0E+02	6.9E+01	6.9E+01	6.7E+01	6.9E+01	6.9E+01
Ethylbenzene	1.03	1.0E+02	5.7E+01	5.6E+01	5.5E+01	5.7E+01	5.6E+01
Fluorene	1.57	1.6E+02	7.0E+00	7.0E+00	7.2E+00	6.9E+00	6.8E+00
Hexachlorobenzenes	0.02	1.5E+00	2.2E-03	2.2E-03	6.7E-03	1.8E-03	1.8E-03
Naphthalene	88.57	8.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03
Phenanthrene	5.33	5.3E+02	1.6E+00	1.6E+00	3.2E+00	1.4E+00	1.4E+00
Phenol	0.41	4.1E+01	3.7E+01	3.7E+01	3.6E+01	3.7E+01	3.7E+01
Polychlorinated biphenyls	1.33	1.3E+02	2.0E-01	2.0E-01	5.9E-01	1.7E-01	1.7E-01
Pyrene	2.69	2.7E+02	1.2E+00	1.2E+00	1.9E+00	1.0E+00	1.0E+00
Toluene	1.76	1.8E+02	1.1E+02	1.0E+02	1.0E+02	1.1E+02	1.0E+02
Total mercury (methyl mercury for air emissions)	2.03	2.0E+02	5.1E-01	5.1E-01	1.1E+00	4.3E-01	4.3E-01
Trichlorobenzenes	0.37	3.7E+01	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Xylene isomers (total)	11.55	1.2E+03	3.9E+02	3.8E+02	3.7E+02	3.8E+02	3.8E+02

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	Based on dredging production rate and an avg specific gravity
% volatilized after 40 days of curing	100.0	for all SMU sediments
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		214		7		5		5	
Benzene	1.80	0.347	0.347	0.268	0.268	0.268	0.268	0.006	0.006
Benzo[a]pyrene	1.14	0.003	0.002	0.003	0.003	0.003	0.000	0.003	0.000
Chlorobenzene	14.29	1.824	1.821	1.824	1.823	1.824	1.824	0.039	0.039
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	0.154	0.153	0.093	0.093	0.088	0.088	0.008	0.008
Ethylbenzene	1.03	0.122	0.122	0.022	0.022	0.021	0.021	0.008	0.008
Fluorene	1.57	0.019	0.018	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	88.57	4.524	4.491	2.890	2.890	2.890	2.890	0.527	0.527
Phenanthrene	5.33	0.017	0.012	0.017	0.017	0.014	0.014	0.014	0.014
Phenol	0.41	0.080	0.080	0.051	0.051	0.036	0.036	0.010	0.010
Polychlorinated biphenyls	1.33	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	2.69	0.009	0.007	0.009	0.009	0.007	0.007	0.007	0.007
Toluene	1.76	0.226	0.226	0.164	0.164	0.151	0.151	0.004	0.004
Total mercury (methyl mercury for air emissions)	2.03	0.006	0.004	0.006	0.006	0.006	0.006	0.005	0.005
Trichlorobenzenes	0.37	0.004	0.004	0.003	0.003	0.003	0.003	0.001	0.001
Xylene isomers (total)	11.55	0.840	0.836	0.832	0.831	0.832	0.832	0.034	0.034

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	Based on dredging production rate and an avg specific gravity
Area of Mixing Pad (acres)	1	for all SMU sediments
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.0E-03	3.9E-02	5.0E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.5E-05	5.9E-04	7.5E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.0E-06	6.8E-05	9.0E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.2E-04	4.9E-03	6.2E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	7.9E-04	6.0E-03	7.9E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.4E-04	6.6E-03	8.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	Based on dredging production rate and an avg specific gravity
Area of Mixing Pad (acres)	1	for all SMU sediments
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	Based on dredging production rate and an avg specific gravity
Area of Mixing Pad (acres)	1	for all SMU sediments
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

		Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
Analyte	Average concentration of dredged material in mg/kg	Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	Based on dredging production rate and an avg specific gravity
Area of Mixing Pad (acres)	1	for all SMU sediments
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		205		7		5		5	
Benzene	1.77	0.340	0.340	0.263	0.263	0.263	0.263	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.015	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.042	0.042	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.032	0.032	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.026	0.026	0.026	0.026	0.026	0.026	0.001	0.001

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				42	5		
Benzene	0.09	100		3.8E-03	4.9E-04	3.8E-03	4.9E-04
Benzo[a]pyrene	1.56	1,096,478		6.5E-02	8.5E-03	5.8E-02	8.3E-03
Chlorobenzene	0.33	500		1.4E-02	1.8E-03	1.4E-02	1.8E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	2,399		1.9E-02	2.4E-03	1.9E-02	2.4E-03
Ethylbenzene	0.21	588		8.7E-03	1.1E-03	8.7E-03	1.1E-03
Fluorene	1.24	15,136		5.2E-02	6.7E-03	5.1E-02	6.7E-03
Hexachlorobenzenes	0.02	1,513,561		9.3E-04	1.2E-04	8.3E-04	1.2E-04
Naphthalene	2.83	2,344		1.2E-01	1.5E-02	1.2E-01	1.5E-02
Phenanthrene	5.51	342,748		2.3E-01	3.0E-02	2.1E-01	3.0E-02
Phenol	0.06	100		2.6E-03	3.4E-04	2.6E-03	3.4E-04
Polychlorinated biphenyls	0.89	1,380,384		3.7E-02	4.8E-03	3.3E-02	4.7E-03
Pyrene	3.67	208,930		1.5E-01	2.0E-02	1.4E-01	2.0E-02
Toluene	0.08	490		3.2E-03	4.2E-04	3.2E-03	4.2E-04
Total mercury (methyl mercury for air emissions)	2.24	366,368	6,961	9.3E-02	1.2E-02	8.5E-02	1.2E-02
Trichlorobenzenes	0.38	18,197		1.6E-02	2.1E-03	1.6E-02	2.1E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	1.7E-03	1.3E-02	1.7E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7): 6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide C
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10.6
Total dredge volume in cy: 148,000
Dredge cut in feet (either average or to max conc): 8.7
Post-dredge water depth (either average or to max conc.) in feet: 8

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 987

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 40%
Specific gravity: 2.6
TOC: 1.9%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 54 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 218,530

Avg Sed Specific gravity 2.5

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	9.0E-02	9.0E-02
Benzo[a]pyrene	1.6E+00	1.6E+00
Chlorobenzene	3.3E-01	3.3E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	4.5E-01	4.5E-01
Ethylbenzene	2.1E-01	2.1E-01
Fluorene	1.2E+00	1.2E+00
Hexachlorobenzenes	2.2E-02	2.2E-02
Naphthalene	2.8E+00	2.8E+00
Phenanthrene	5.5E+00	5.5E+00
Phenol	6.3E-02	6.3E-02
Polychlorinated biphenyls	8.9E-01	8.9E-01
Pyrene	3.7E+00	3.7E+00
Toluene	7.7E-02	7.7E-02
Total mercury (methyl mercury for air emissions)	2.2E+00	2.2E+00
Trichlorobenzenes	3.8E-01	3.8E-01
Xylene isomers (total)	3.2E-01	3.2E-01

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.09	9.0E+00	7.9E+00	7.8E+00	7.6E+00	7.9E+00	7.8E+00
Benzo[a]pyrene	1.56	1.6E+02	4.7E-01	4.7E-01	5.6E-01	3.6E-01	3.6E-01
Chlorobenzene	0.33	3.3E+01	1.8E+01	1.7E+01	1.7E+01	1.7E+01	1.7E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	4.5E+01	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Ethylbenzene	0.21	2.1E+01	1.0E+01	1.0E+01	9.9E+00	1.0E+01	1.0E+01
Fluorene	1.24	1.2E+02	4.6E+00	4.6E+00	4.5E+00	4.5E+00	4.5E+00
Hexachlorobenzenes	0.02	2.2E+00	6.4E-03	6.3E-03	7.8E-03	5.0E-03	4.9E-03
Naphthalene	2.83	2.8E+02	5.4E+01	5.4E+01	5.2E+01	5.4E+01	5.4E+01
Phenanthrene	5.51	5.5E+02	2.2E+00	2.2E+00	2.6E+00	1.9E+00	1.8E+00
Phenol	0.06	6.3E+00	5.5E+00	5.5E+00	5.3E+00	5.5E+00	5.5E+00
Polychlorinated biphenyls	0.89	8.9E+01	2.6E-01	2.6E-01	3.1E-01	2.0E-01	2.0E-01
Pyrene	3.67	3.7E+02	1.9E+00	1.9E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.08	7.7E+00	4.1E+00	4.1E+00	4.0E+00	4.1E+00	4.1E+00
Total mercury (methyl mercury for air emissions)	2.24	2.2E+02	8.9E-01	8.9E-01	1.0E+00	7.3E-01	7.3E-01
Trichlorobenzenes	0.38	3.8E+01	1.2E+00	1.2E+00	1.2E+00	1.2E+00	1.2E+00
Xylene isomers (total)	0.32	3.2E+01	8.9E+00	8.9E+00	8.6E+00	8.9E+00	8.8E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative C, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide C
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	54	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	218,530	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		389		13		9		9	
Benzene	0.09	0.031	0.031	0.024	0.024	0.024	0.024	0.001	0.001
Benzo[a]pyrene	1.56	0.010	0.005	0.010	0.010	0.009	0.000	0.009	0.000
Chlorobenzene	0.33	0.069	0.068	0.069	0.069	0.069	0.069	0.002	0.002
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	0.035	0.034	0.021	0.021	0.020	0.020	0.003	0.003
Ethylbenzene	0.21	0.040	0.040	0.007	0.007	0.007	0.007	0.003	0.003
Fluorene	1.24	0.024	0.022	0.007	0.007	0.007	0.007	0.007	0.007
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.83	0.223	0.219	0.144	0.144	0.144	0.144	0.030	0.030
Phenanthrene	5.51	0.038	0.021	0.038	0.037	0.031	0.031	0.030	0.030
Phenol	0.06	0.022	0.022	0.014	0.014	0.010	0.010	0.003	0.003
Polychlorinated biphenyls	0.89	0.006	0.003	0.006	0.005	0.006	0.006	0.006	0.006
Pyrene	3.67	0.027	0.016	0.027	0.026	0.020	0.020	0.020	0.020
Toluene	0.08	0.016	0.016	0.012	0.012	0.011	0.011	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.24	0.015	0.008	0.014	0.013	0.013	0.013	0.013	0.013
Trichlorobenzenes	0.38	0.007	0.006	0.006	0.006	0.004	0.004	0.003	0.003
Xylene isomers (total)	0.32	0.036	0.035	0.036	0.036	0.036	0.036	0.002	0.002

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				48	3		
Benzene	3.97	100		1.9E-01	1.2E-02	1.9E-01	1.2E-02
Benzo[a]pyrene	1.18	1,096,478		5.6E-02	3.6E-03	5.0E-02	3.5E-03
Chlorobenzene	32.26	500		1.5E+00	9.8E-02	1.5E+00	9.8E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	2,399		3.1E+00	1.9E-01	3.1E+00	1.9E-01
Ethylbenzene	2.69	588		1.3E-01	8.1E-03	1.3E-01	8.1E-03
Fluorene	3.33	15,136		1.6E-01	1.0E-02	1.6E-01	1.0E-02
Hexachlorobenzenes	0.40	1,513,561		1.9E-02	1.2E-03	1.7E-02	1.2E-03
Naphthalene	77.70	2,344		3.7E+00	2.3E-01	3.7E+00	2.3E-01
Phenanthrene	6.08	342,748		2.9E-01	1.8E-02	2.6E-01	1.8E-02
Phenol	2.67	100		1.3E-01	8.1E-03	1.3E-01	8.1E-03
Polychlorinated biphenyls	1.20	1,380,384		5.7E-02	3.6E-03	5.0E-02	3.6E-03
Pyrene	4.29	208,930		2.1E-01	1.3E-02	1.9E-01	1.3E-02
Toluene	7.43	490		3.5E-01	2.2E-02	3.5E-01	2.2E-02
Total mercury (methyl mercury for air emissions)	13.12	348,050	6,961	6.3E-01	4.0E-02	5.7E-01	3.9E-02
Trichlorobenzenes	20.70	18,197		9.9E-01	6.3E-02	9.7E-01	6.3E-02
Xylene isomers (total)	45.47	1,413		2.2E+00	1.4E-01	2.2E+00	1.4E-01

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	4.0E+00	4.0E+00
Benzo[a]pyrene	1.2E+00	1.2E+00
Chlorobenzene	3.2E+01	3.2E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.4E+01	6.4E+01
Ethylbenzene	2.7E+00	2.7E+00
Fluorene	3.3E+00	3.3E+00
Hexachlorobenzenes	4.0E-01	4.0E-01
Naphthalene	7.8E+01	7.8E+01
Phenanthrene	6.1E+00	6.1E+00
Phenol	2.7E+00	2.7E+00
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	4.3E+00	4.3E+00
Toluene	7.4E+00	7.4E+00
Total mercury (methyl mercury for air emissions)	1.3E+01	1.3E+01
Trichlorobenzenes	2.1E+01	2.1E+01
Xylene isomers (total)	4.5E+01	4.5E+01

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	3.97	4.0E+02	3.5E+02	3.4E+02	3.3E+02	3.5E+02	3.4E+02
Benzo[a]pyrene	1.18	1.2E+02	1.8E-01	1.8E-01	4.1E-01	1.4E-01	1.4E-01
Chlorobenzene	32.26	3.2E+03	1.7E+03	1.7E+03	1.6E+03	1.7E+03	1.6E+03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	6.4E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	2.69	2.7E+02	1.3E+02	1.3E+02	1.2E+02	1.3E+02	1.3E+02
Fluorene	3.33	3.3E+02	1.1E+01	1.1E+01	1.2E+01	1.1E+01	1.1E+01
Hexachlorobenzenes	0.40	4.0E+01	5.7E-02	5.5E-02	1.3E-01	4.4E-02	4.2E-02
Naphthalene	77.70	7.8E+03	1.4E+03	1.4E+03	1.4E+03	1.4E+03	1.4E+03
Phenanthrene	6.08	6.1E+02	1.6E+00	1.5E+00	2.7E+00	1.3E+00	1.3E+00
Phenol	2.67	2.7E+02	2.3E+02	2.3E+02	2.2E+02	2.3E+02	2.3E+02
Polychlorinated biphenyls	1.20	1.2E+02	1.8E-01	1.8E-01	4.0E-01	1.4E-01	1.4E-01
Pyrene	4.29	4.3E+02	1.5E+00	1.5E+00	2.3E+00	1.3E+00	1.3E+00
Toluene	7.43	7.4E+02	3.9E+02	3.8E+02	3.8E+02	3.9E+02	3.8E+02
Total mercury (methyl mercury for air emissions)	13.12	1.3E+03	3.4E+00	3.4E+00	5.8E+00	2.8E+00	2.8E+00
Trichlorobenzenes	20.70	2.1E+03	6.0E+01	5.9E+01	6.1E+01	5.8E+01	5.7E+01
Xylene isomers (total)	45.47	4.5E+03	1.2E+03	1.2E+03	1.2E+03	1.2E+03	1.2E+03

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		273		8		6		6	
Benzene	3.97	0.935	0.934	0.722	0.722	0.722	0.722	0.016	0.016
Benzo[a]pyrene	1.18	0.004	0.002	0.004	0.004	0.004	0.000	0.004	0.000
Chlorobenzene	32.26	4.598	4.585	4.598	4.597	4.598	4.598	0.104	0.104
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	3.322	3.279	2.018	2.017	1.915	1.915	0.205	0.205
Ethylbenzene	2.69	0.353	0.352	0.063	0.063	0.060	0.060	0.023	0.023
Fluorene	3.33	0.041	0.038	0.010	0.010	0.010	0.010	0.010	0.010
Hexachlorobenzenes	0.40	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	77.70	4.060	4.009	2.606	2.605	2.606	2.606	0.503	0.503
Phenanthrene	6.08	0.022	0.014	0.022	0.022	0.019	0.019	0.018	0.018
Phenol	2.67	0.641	0.640	0.406	0.406	0.287	0.287	0.081	0.081
Polychlorinated biphenyls	1.20	0.004	0.002	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	4.29	0.017	0.011	0.017	0.017	0.013	0.013	0.013	0.013
Toluene	7.43	1.068	1.065	0.775	0.775	0.715	0.715	0.022	0.022
Total mercury (methyl mercury for air emissions)	13.12	0.049	0.030	0.043	0.042	0.043	0.043	0.041	0.041
Trichlorobenzenes	20.70	0.222	0.204	0.195	0.195	0.147	0.147	0.085	0.085
Xylene isomers (total)	45.47	3.455	3.429	3.422	3.421	3.422	3.422	0.155	0.155

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				19	3		
Benzene	1.80	100		3.4E-02	4.6E-03	3.4E-02	4.6E-03
Benzo[a]pyrene	1.14	1,096,478		2.2E-02	2.9E-03	2.1E-02	2.9E-03
Chlorobenzene	14.29	500		2.7E-01	3.6E-02	2.7E-01	3.6E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	2,399		5.8E-02	7.8E-03	5.8E-02	7.8E-03
Ethylbenzene	1.03	588		1.9E-02	2.6E-03	1.9E-02	2.6E-03
Fluorene	1.57	15,136		3.0E-02	4.0E-03	3.0E-02	4.0E-03
Hexachlorobenzenes	0.02	1,513,561		2.9E-04	3.8E-05	2.7E-04	3.8E-05
Naphthalene	88.57	2,344		1.7E+00	2.3E-01	1.7E+00	2.3E-01
Phenanthrene	5.33	342,748		1.0E-01	1.4E-02	9.8E-02	1.4E-02
Phenol	0.41	100		7.8E-03	1.0E-03	7.8E-03	1.0E-03
Polychlorinated biphenyls	1.33	1,380,384		2.5E-02	3.4E-03	2.4E-02	3.4E-03
Pyrene	2.69	208,930		5.1E-02	6.8E-03	5.0E-02	6.8E-03
Toluene	1.76	490		3.3E-02	4.5E-03	3.3E-02	4.5E-03
Total mercury (methyl mercury for air emissions)	2.03	464,067	6,961	3.8E-02	5.2E-03	3.7E-02	5.1E-03
Trichlorobenzenes	0.37	18,197		7.0E-03	9.4E-04	7.0E-03	9.4E-04
Xylene isomers (total)	11.55	1,413		2.2E-01	2.9E-02	2.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	1.4E+01	1.4E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E+00	3.0E+00
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	1.6E+00	1.6E+00
Hexachlorobenzenes	1.5E-02	1.5E-02
Naphthalene	8.9E+01	8.9E+01
Phenanthrene	5.3E+00	5.3E+00
Phenol	4.1E-01	4.1E-01
Polychlorinated biphenyls	1.3E+00	1.3E+00
Pyrene	2.7E+00	2.7E+00
Toluene	1.8E+00	1.8E+00
Total mercury (methyl mercury for air emissions)	2.0E+00	2.0E+00
Trichlorobenzenes	3.7E-01	3.7E-01
Xylene isomers (total)	1.2E+01	1.2E+01

SMU (Insert Value: 1 through 7): 2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide D
Notes: Average concentration in dredge cut

Site Characteristics
Area of dredge site within SMU in acres: 10
Total dredge volume in cy: 169,000
Dredge cut in feet (either average or to max conc): 10.7
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics
Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 1,127

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics
Percent fines: 98%
Specific gravity: 2.52
TOC: 1.5%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics
Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics
Area of Lagoon (acres) 84 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 339,936

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.80	1.8E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02
Benzo[a]pyrene	1.14	1.1E+02	1.9E-01	1.9E-01	5.2E-01	1.6E-01	1.5E-01
Chlorobenzene	14.29	1.4E+03	8.5E+02	8.4E+02	8.2E+02	8.5E+02	8.4E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	3.0E+02	6.9E+01	6.9E+01	6.7E+01	6.9E+01	6.9E+01
Ethylbenzene	1.03	1.0E+02	5.7E+01	5.6E+01	5.5E+01	5.7E+01	5.6E+01
Fluorene	1.57	1.6E+02	7.0E+00	7.0E+00	7.2E+00	6.9E+00	6.8E+00
Hexachlorobenzenes	0.02	1.5E+00	2.2E-03	2.2E-03	6.7E-03	1.8E-03	1.8E-03
Naphthalene	88.57	8.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03
Phenanthrene	5.33	5.3E+02	1.6E+00	1.6E+00	3.2E+00	1.4E+00	1.4E+00
Phenol	0.41	4.1E+01	3.7E+01	3.7E+01	3.6E+01	3.7E+01	3.7E+01
Polychlorinated biphenyls	1.33	1.3E+02	2.0E-01	2.0E-01	5.9E-01	1.7E-01	1.7E-01
Pyrene	2.69	2.7E+02	1.2E+00	1.2E+00	1.9E+00	1.0E+00	1.0E+00
Toluene	1.76	1.8E+02	1.1E+02	1.0E+02	1.0E+02	1.1E+02	1.0E+02
Total mercury (methyl mercury for air emissions)	2.03	2.0E+02	5.1E-01	5.1E-01	1.1E+00	4.3E-01	4.3E-01
Trichlorobenzenes	0.37	3.7E+01	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Xylene isomers (total)	11.55	1.2E+03	3.9E+02	3.8E+02	3.7E+02	3.8E+02	3.8E+02

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		214		7		5		5	
Benzene	1.80	0.347	0.347	0.268	0.268	0.268	0.268	0.006	0.006
Benzo[a]pyrene	1.14	0.003	0.002	0.003	0.003	0.003	0.000	0.003	0.000
Chlorobenzene	14.29	1.824	1.821	1.824	1.823	1.824	1.824	0.039	0.039
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	0.154	0.153	0.093	0.093	0.088	0.088	0.008	0.008
Ethylbenzene	1.03	0.122	0.122	0.022	0.022	0.021	0.021	0.008	0.008
Fluorene	1.57	0.019	0.018	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	88.57	4.524	4.491	2.890	2.890	2.890	2.890	0.527	0.527
Phenanthrene	5.33	0.017	0.012	0.017	0.017	0.014	0.014	0.014	0.014
Phenol	0.41	0.080	0.080	0.051	0.051	0.036	0.036	0.010	0.010
Polychlorinated biphenyls	1.33	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	2.69	0.009	0.007	0.009	0.009	0.007	0.007	0.007	0.007
Toluene	1.76	0.226	0.226	0.164	0.164	0.151	0.151	0.004	0.004
Total mercury (methyl mercury for air emissions)	2.03	0.006	0.004	0.006	0.006	0.006	0.006	0.005	0.005
Trichlorobenzenes	0.37	0.004	0.004	0.003	0.003	0.003	0.003	0.001	0.001
Xylene isomers (total)	11.55	0.840	0.836	0.832	0.831	0.832	0.832	0.034	0.034

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.0E-03	3.9E-02	5.0E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.5E-05	5.9E-04	7.5E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.0E-06	6.8E-05	9.0E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.2E-04	4.9E-03	6.2E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	7.9E-04	6.0E-03	7.9E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.4E-04	6.6E-03	8.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	11
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.4
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		205		7		5		5	
Benzene	1.77	0.340	0.340	0.263	0.263	0.263	0.263	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.015	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.042	0.042	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.032	0.032	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.026	0.026	0.026	0.026	0.026	0.026	0.001	0.001

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				55	5		
Benzene	0.01	100		3.1E-04	2.8E-05	3.1E-04	2.8E-05
Benzo[a]pyrene	0.08	1,096,478		4.4E-03	4.0E-04	4.0E-03	3.9E-04
Chlorobenzene	0.01	500		3.5E-04	3.2E-05	3.5E-04	3.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2,399		1.5E-03	1.4E-04	1.5E-03	1.4E-04
Ethylbenzene	0.01	588		6.6E-04	5.9E-05	6.6E-04	5.9E-05
Fluorene	0.03	15,136		1.8E-03	1.6E-04	1.7E-03	1.6E-04
Hexachlorobenzenes	0.11	1,513,561		6.0E-03	5.4E-04	5.4E-03	5.4E-04
Naphthalene	0.07	2,344		4.1E-03	3.7E-04	4.1E-03	3.7E-04
Phenanthrene	0.08	342,748		4.6E-03	4.1E-04	4.2E-03	4.1E-04
Phenol	0.08	100		4.5E-03	4.1E-04	4.5E-03	4.1E-04
Polychlorinated biphenyls	0.37	1,380,384		2.0E-02	1.8E-03	1.8E-02	1.8E-03
Pyrene	0.19	208,930		1.0E-02	9.3E-04	9.5E-03	9.2E-04
Toluene	0.00	490		2.7E-04	2.4E-05	2.7E-04	2.4E-05
Total mercury (methyl mercury for air emissions)	7.46	497,214	6,961	4.1E-01	3.7E-02	3.8E-01	3.7E-02
Trichlorobenzenes	0.02	18,197		9.4E-04	8.5E-05	9.2E-04	8.5E-05
Xylene isomers (total)	0.09	1,413		4.9E-03	4.4E-04	4.9E-03	4.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.5E-03	5.5E-03
Benzo[a]pyrene	8.0E-02	8.0E-02
Chlorobenzene	6.3E-03	6.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.7E-02	2.7E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	7.5E-02	7.5E-02
Phenanthrene	8.3E-02	8.3E-02
Phenol	8.1E-02	8.1E-02
Polychlorinated biphenyls	3.7E-01	3.7E-01
Pyrene	1.9E-01	1.9E-01
Toluene	4.9E-03	4.9E-03
Total mercury (methyl mercury for air emissions)	7.5E+00	7.5E+00
Trichlorobenzenes	1.7E-02	1.7E-02
Xylene isomers (total)	8.9E-02	8.9E-02

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.01	5.5E-01	5.1E-01	5.0E-01	4.9E-01	5.1E-01	5.0E-01
Benzo[a]pyrene	0.08	8.0E+00	1.9E-02	1.9E-02	3.9E-02	1.6E-02	1.6E-02
Chlorobenzene	0.01	6.3E-01	3.9E-01	3.8E-01	3.7E-01	3.9E-01	3.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2.7E+00	6.5E-01	6.5E-01	6.3E-01	6.5E-01	6.5E-01
Ethylbenzene	0.01	1.2E+00	6.8E-01	6.7E-01	6.5E-01	6.8E-01	6.7E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.4E-02	2.3E-02	5.1E-02	2.0E-02	1.9E-02
Naphthalene	0.07	7.5E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Phenanthrene	0.08	8.3E+00	3.2E-02	3.1E-02	5.2E-02	2.8E-02	2.7E-02
Phenol	0.08	8.1E+00	7.4E+00	7.4E+00	7.1E+00	7.4E+00	7.4E+00
Polychlorinated biphenyls	0.37	3.7E+01	8.3E-02	8.3E-02	1.8E-01	6.9E-02	6.9E-02
Pyrene	0.19	1.9E+01	9.7E-02	9.6E-02	1.4E-01	8.6E-02	8.5E-02
Toluene	0.00	4.9E-01	3.0E-01	3.0E-01	2.9E-01	3.0E-01	3.0E-01
Total mercury (methyl mercury for air emissions)	7.46	7.5E+02	2.4E+00	2.4E+00	4.2E+00	2.0E+00	2.0E+00
Trichlorobenzenes	0.02	1.7E+00	6.9E-02	6.8E-02	7.1E-02	6.8E-02	6.7E-02
Xylene isomers (total)	0.09	8.9E+00	3.1E+00	3.1E+00	3.0E+00	3.1E+00	3.0E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		337		12		8		8	
Benzene	0.01	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.01	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	0.07	0.006	0.006	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.08	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.08	0.025	0.025	0.016	0.016	0.011	0.011	0.003	0.003
Polychlorinated biphenyls	0.37	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Pyrene	0.19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	7.46	0.045	0.028	0.040	0.040	0.040	0.040	0.039	0.039
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.09	0.011	0.011	0.011	0.011	0.011	0.011	0.000	0.000

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				42	5		
Benzene	0.09	100		3.8E-03	4.9E-04	3.8E-03	4.9E-04
Benzo[a]pyrene	1.56	1,096,478		6.5E-02	8.5E-03	5.8E-02	8.3E-03
Chlorobenzene	0.33	500		1.4E-02	1.8E-03	1.4E-02	1.8E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	2,399		1.9E-02	2.4E-03	1.9E-02	2.4E-03
Ethylbenzene	0.21	588		8.7E-03	1.1E-03	8.7E-03	1.1E-03
Fluorene	1.24	15,136		5.2E-02	6.7E-03	5.1E-02	6.7E-03
Hexachlorobenzenes	0.02	1,513,561		9.3E-04	1.2E-04	8.3E-04	1.2E-04
Naphthalene	2.83	2,344		1.2E-01	1.5E-02	1.2E-01	1.5E-02
Phenanthrene	5.51	342,748		2.3E-01	3.0E-02	2.1E-01	3.0E-02
Phenol	0.06	100		2.6E-03	3.4E-04	2.6E-03	3.4E-04
Polychlorinated biphenyls	0.89	1,380,384		3.7E-02	4.8E-03	3.3E-02	4.7E-03
Pyrene	3.67	208,930		1.5E-01	2.0E-02	1.4E-01	2.0E-02
Toluene	0.08	490		3.2E-03	4.2E-04	3.2E-03	4.2E-04
Total mercury (methyl mercury for air emissions)	2.24	366,368	6,961	9.3E-02	1.2E-02	8.5E-02	1.2E-02
Trichlorobenzenes	0.38	18,197		1.6E-02	2.1E-03	1.6E-02	2.1E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	1.7E-03	1.3E-02	1.7E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	9.0E-02	9.0E-02
Benzo[a]pyrene	1.6E+00	1.6E+00
Chlorobenzene	3.3E-01	3.3E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	4.5E-01	4.5E-01
Ethylbenzene	2.1E-01	2.1E-01
Fluorene	1.2E+00	1.2E+00
Hexachlorobenzenes	2.2E-02	2.2E-02
Naphthalene	2.8E+00	2.8E+00
Phenanthrene	5.5E+00	5.5E+00
Phenol	6.3E-02	6.3E-02
Polychlorinated biphenyls	8.9E-01	8.9E-01
Pyrene	3.7E+00	3.7E+00
Toluene	7.7E-02	7.7E-02
Total mercury (methyl mercury for air emissions)	2.2E+00	2.2E+00
Trichlorobenzenes	3.8E-01	3.8E-01
Xylene isomers (total)	3.2E-01	3.2E-01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.09	9.0E+00	7.9E+00	7.8E+00	7.6E+00	7.9E+00	7.8E+00
Benzo[a]pyrene	1.56	1.6E+02	4.7E-01	4.7E-01	5.6E-01	3.6E-01	3.6E-01
Chlorobenzene	0.33	3.3E+01	1.8E+01	1.7E+01	1.7E+01	1.7E+01	1.7E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	4.5E+01	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Ethylbenzene	0.21	2.1E+01	1.0E+01	1.0E+01	9.9E+00	1.0E+01	1.0E+01
Fluorene	1.24	1.2E+02	4.6E+00	4.6E+00	4.5E+00	4.5E+00	4.5E+00
Hexachlorobenzenes	0.02	2.2E+00	6.4E-03	6.3E-03	7.8E-03	5.0E-03	4.9E-03
Naphthalene	2.83	2.8E+02	5.4E+01	5.4E+01	5.2E+01	5.4E+01	5.4E+01
Phenanthrene	5.51	5.5E+02	2.2E+00	2.2E+00	2.6E+00	1.9E+00	1.8E+00
Phenol	0.06	6.3E+00	5.5E+00	5.5E+00	5.3E+00	5.5E+00	5.5E+00
Polychlorinated biphenyls	0.89	8.9E+01	2.6E-01	2.6E-01	3.1E-01	2.0E-01	2.0E-01
Pyrene	3.67	3.7E+02	1.9E+00	1.9E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.08	7.7E+00	4.1E+00	4.1E+00	4.0E+00	4.1E+00	4.1E+00
Total mercury (methyl mercury for air emissions)	2.24	2.2E+02	8.9E-01	8.9E-01	1.0E+00	7.3E-01	7.3E-01
Trichlorobenzenes	0.38	3.8E+01	1.2E+00	1.2E+00	1.2E+00	1.2E+00	1.2E+00
Xylene isomers (total)	0.32	3.2E+01	8.9E+00	8.9E+00	8.6E+00	8.9E+00	8.8E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.6
Total dredge volume in cy:	148,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	987
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	84	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	339,936	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		389		13		9		9	
Benzene	0.09	0.031	0.031	0.024	0.024	0.024	0.024	0.001	0.001
Benzo[a]pyrene	1.56	0.010	0.005	0.010	0.010	0.009	0.000	0.009	0.000
Chlorobenzene	0.33	0.069	0.068	0.069	0.069	0.069	0.069	0.002	0.002
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	0.035	0.034	0.021	0.021	0.020	0.020	0.003	0.003
Ethylbenzene	0.21	0.040	0.040	0.007	0.007	0.007	0.007	0.003	0.003
Fluorene	1.24	0.024	0.022	0.007	0.007	0.007	0.007	0.007	0.007
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.83	0.223	0.219	0.144	0.144	0.144	0.144	0.030	0.030
Phenanthrene	5.51	0.038	0.021	0.038	0.037	0.031	0.031	0.030	0.030
Phenol	0.06	0.022	0.022	0.014	0.014	0.010	0.010	0.003	0.003
Polychlorinated biphenyls	0.89	0.006	0.003	0.006	0.005	0.006	0.006	0.006	0.006
Pyrene	3.67	0.027	0.016	0.027	0.026	0.020	0.020	0.020	0.020
Toluene	0.08	0.016	0.016	0.012	0.012	0.011	0.011	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.24	0.015	0.008	0.014	0.013	0.013	0.013	0.013	0.013
Trichlorobenzenes	0.38	0.007	0.006	0.006	0.006	0.004	0.004	0.003	0.003
Xylene isomers (total)	0.32	0.036	0.035	0.036	0.036	0.036	0.036	0.002	0.002

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				48	3		
Benzene	3.97	100		1.9E-01	1.2E-02	1.9E-01	1.2E-02
Benzo[a]pyrene	1.18	1,096,478		5.6E-02	3.6E-03	5.0E-02	3.5E-03
Chlorobenzene	32.26	500		1.5E+00	9.8E-02	1.5E+00	9.8E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	2,399		3.1E+00	1.9E-01	3.1E+00	1.9E-01
Ethylbenzene	2.69	588		1.3E-01	8.1E-03	1.3E-01	8.1E-03
Fluorene	3.33	15,136		1.6E-01	1.0E-02	1.6E-01	1.0E-02
Hexachlorobenzenes	0.40	1,513,561		1.9E-02	1.2E-03	1.7E-02	1.2E-03
Naphthalene	77.70	2,344		3.7E+00	2.3E-01	3.7E+00	2.3E-01
Phenanthrene	6.08	342,748		2.9E-01	1.8E-02	2.6E-01	1.8E-02
Phenol	2.67	100		1.3E-01	8.1E-03	1.3E-01	8.1E-03
Polychlorinated biphenyls	1.20	1,380,384		5.7E-02	3.6E-03	5.0E-02	3.6E-03
Pyrene	4.29	208,930		2.1E-01	1.3E-02	1.9E-01	1.3E-02
Toluene	7.43	490		3.5E-01	2.2E-02	3.5E-01	2.2E-02
Total mercury (methyl mercury for air emissions)	13.12	348,050	6,961	6.3E-01	4.0E-02	5.7E-01	3.9E-02
Trichlorobenzenes	20.70	18,197		9.9E-01	6.3E-02	9.7E-01	6.3E-02
Xylene isomers (total)	45.47	1,413		2.2E+00	1.4E-01	2.2E+00	1.4E-01

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	4.0E+00	4.0E+00
Benzo[a]pyrene	1.2E+00	1.2E+00
Chlorobenzene	3.2E+01	3.2E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.4E+01	6.4E+01
Ethylbenzene	2.7E+00	2.7E+00
Fluorene	3.3E+00	3.3E+00
Hexachlorobenzenes	4.0E-01	4.0E-01
Naphthalene	7.8E+01	7.8E+01
Phenanthrene	6.1E+00	6.1E+00
Phenol	2.7E+00	2.7E+00
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	4.3E+00	4.3E+00
Toluene	7.4E+00	7.4E+00
Total mercury (methyl mercury for air emissions)	1.3E+01	1.3E+01
Trichlorobenzenes	2.1E+01	2.1E+01
Xylene isomers (total)	4.5E+01	4.5E+01

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	3.97	4.0E+02	3.5E+02	3.4E+02	3.3E+02	3.5E+02	3.4E+02
Benzo[a]pyrene	1.18	1.2E+02	1.8E-01	1.8E-01	4.1E-01	1.4E-01	1.4E-01
Chlorobenzene	32.26	3.2E+03	1.7E+03	1.7E+03	1.6E+03	1.7E+03	1.6E+03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	6.4E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	2.69	2.7E+02	1.3E+02	1.3E+02	1.2E+02	1.3E+02	1.3E+02
Fluorene	3.33	3.3E+02	1.1E+01	1.1E+01	1.2E+01	1.1E+01	1.1E+01
Hexachlorobenzenes	0.40	4.0E+01	5.7E-02	5.5E-02	1.3E-01	4.4E-02	4.2E-02
Naphthalene	77.70	7.8E+03	1.4E+03	1.4E+03	1.4E+03	1.4E+03	1.4E+03
Phenanthrene	6.08	6.1E+02	1.6E+00	1.5E+00	2.7E+00	1.3E+00	1.3E+00
Phenol	2.67	2.7E+02	2.3E+02	2.3E+02	2.2E+02	2.3E+02	2.3E+02
Polychlorinated biphenyls	1.20	1.2E+02	1.8E-01	1.8E-01	4.0E-01	1.4E-01	1.4E-01
Pyrene	4.29	4.3E+02	1.5E+00	1.5E+00	2.3E+00	1.3E+00	1.3E+00
Toluene	7.43	7.4E+02	3.9E+02	3.8E+02	3.8E+02	3.9E+02	3.8E+02
Total mercury (methyl mercury for air emissions)	13.12	1.3E+03	3.4E+00	3.4E+00	5.8E+00	2.8E+00	2.8E+00
Trichlorobenzenes	20.70	2.1E+03	6.0E+01	5.9E+01	6.1E+01	5.8E+01	5.7E+01
Xylene isomers (total)	45.47	4.5E+03	1.2E+03	1.2E+03	1.2E+03	1.2E+03	1.2E+03

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		273		8		6		6	
Benzene	3.97	0.935	0.934	0.722	0.722	0.722	0.722	0.016	0.016
Benzo[a]pyrene	1.18	0.004	0.002	0.004	0.004	0.004	0.000	0.004	0.000
Chlorobenzene	32.26	4.598	4.585	4.598	4.597	4.598	4.598	0.104	0.104
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	3.322	3.279	2.018	2.017	1.915	1.915	0.205	0.205
Ethylbenzene	2.69	0.353	0.352	0.063	0.063	0.060	0.060	0.023	0.023
Fluorene	3.33	0.041	0.038	0.010	0.010	0.010	0.010	0.010	0.010
Hexachlorobenzenes	0.40	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	77.70	4.060	4.009	2.606	2.605	2.606	2.606	0.503	0.503
Phenanthrene	6.08	0.022	0.014	0.022	0.022	0.019	0.019	0.018	0.018
Phenol	2.67	0.641	0.640	0.407	0.406	0.287	0.287	0.081	0.081
Polychlorinated biphenyls	1.20	0.004	0.002	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	4.29	0.017	0.011	0.017	0.017	0.013	0.013	0.013	0.013
Toluene	7.43	1.068	1.065	0.775	0.775	0.715	0.715	0.022	0.022
Total mercury (methyl mercury for air emissions)	13.12	0.049	0.030	0.043	0.042	0.043	0.043	0.041	0.041
Trichlorobenzenes	20.70	0.222	0.204	0.195	0.195	0.147	0.147	0.085	0.085
Xylene isomers (total)	45.47	3.455	3.429	3.422	3.421	3.422	3.422	0.155	0.155

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				19	3		
Benzene	1.80	100		3.4E-02	4.6E-03	3.4E-02	4.6E-03
Benzo[a]pyrene	1.14	1,096,478		2.2E-02	2.9E-03	2.1E-02	2.9E-03
Chlorobenzene	14.29	500		2.7E-01	3.6E-02	2.7E-01	3.6E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	2,399		5.8E-02	7.8E-03	5.8E-02	7.8E-03
Ethylbenzene	1.03	588		1.9E-02	2.6E-03	1.9E-02	2.6E-03
Fluorene	1.57	15,136		3.0E-02	4.0E-03	3.0E-02	4.0E-03
Hexachlorobenzenes	0.02	1,513,561		2.9E-04	3.8E-05	2.7E-04	3.8E-05
Naphthalene	88.57	2,344		1.7E+00	2.3E-01	1.7E+00	2.3E-01
Phenanthrene	5.33	342,748		1.0E-01	1.4E-02	9.8E-02	1.4E-02
Phenol	0.41	100		7.8E-03	1.0E-03	7.8E-03	1.0E-03
Polychlorinated biphenyls	1.33	1,380,384		2.5E-02	3.4E-03	2.4E-02	3.4E-03
Pyrene	2.69	208,930		5.1E-02	6.8E-03	5.0E-02	6.8E-03
Toluene	1.76	490		3.3E-02	4.5E-03	3.3E-02	4.5E-03
Total mercury (methyl mercury for air emissions)	2.03	464,067	6,961	3.8E-02	5.2E-03	3.7E-02	5.1E-03
Trichlorobenzenes	0.37	18,197		7.0E-03	9.4E-04	7.0E-03	9.4E-04
Xylene isomers (total)	11.55	1,413		2.2E-01	2.9E-02	2.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	1.4E+01	1.4E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E+00	3.0E+00
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	1.6E+00	1.6E+00
Hexachlorobenzenes	1.5E-02	1.5E-02
Naphthalene	8.9E+01	8.9E+01
Phenanthrene	5.3E+00	5.3E+00
Phenol	4.1E-01	4.1E-01
Polychlorinated biphenyls	1.3E+00	1.3E+00
Pyrene	2.7E+00	2.7E+00
Toluene	1.8E+00	1.8E+00
Total mercury (methyl mercury for air emissions)	2.0E+00	2.0E+00
Trichlorobenzenes	3.7E-01	3.7E-01
Xylene isomers (total)	1.2E+01	1.2E+01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.80	1.8E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02
Benzo[a]pyrene	1.14	1.1E+02	1.9E-01	1.9E-01	5.2E-01	1.6E-01	1.5E-01
Chlorobenzene	14.29	1.4E+03	8.5E+02	8.4E+02	8.2E+02	8.5E+02	8.4E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	3.0E+02	6.9E+01	6.9E+01	6.7E+01	6.9E+01	6.9E+01
Ethylbenzene	1.03	1.0E+02	5.7E+01	5.6E+01	5.5E+01	5.7E+01	5.6E+01
Fluorene	1.57	1.6E+02	7.0E+00	7.0E+00	7.2E+00	6.9E+00	6.8E+00
Hexachlorobenzenes	0.02	1.5E+00	2.2E-03	2.2E-03	6.7E-03	1.8E-03	1.8E-03
Naphthalene	88.57	8.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03
Phenanthrene	5.33	5.3E+02	1.6E+00	1.6E+00	3.2E+00	1.4E+00	1.4E+00
Phenol	0.41	4.1E+01	3.7E+01	3.7E+01	3.6E+01	3.7E+01	3.7E+01
Polychlorinated biphenyls	1.33	1.3E+02	2.0E-01	2.0E-01	5.9E-01	1.7E-01	1.7E-01
Pyrene	2.69	2.7E+02	1.2E+00	1.2E+00	1.9E+00	1.0E+00	1.0E+00
Toluene	1.76	1.8E+02	1.1E+02	1.0E+02	1.0E+02	1.1E+02	1.0E+02
Total mercury (methyl mercury for air emissions)	2.03	2.0E+02	5.1E-01	5.1E-01	1.1E+00	4.3E-01	4.3E-01
Trichlorobenzenes	0.37	3.7E+01	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Xylene isomers (total)	11.55	1.2E+03	3.9E+02	3.8E+02	3.7E+02	3.8E+02	3.8E+02

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		214		7		5		5	
Benzene	1.80	0.347	0.347	0.268	0.268	0.268	0.268	0.006	0.006
Benzo[a]pyrene	1.14	0.003	0.002	0.003	0.003	0.003	0.000	0.003	0.000
Chlorobenzene	14.29	1.824	1.821	1.824	1.823	1.824	1.824	0.039	0.039
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	0.154	0.153	0.093	0.093	0.088	0.088	0.008	0.008
Ethylbenzene	1.03	0.122	0.122	0.022	0.022	0.021	0.021	0.008	0.008
Fluorene	1.57	0.019	0.018	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	88.57	4.524	4.491	2.890	2.890	2.890	2.890	0.527	0.527
Phenanthrene	5.33	0.017	0.012	0.017	0.017	0.014	0.014	0.014	0.014
Phenol	0.41	0.080	0.080	0.051	0.051	0.036	0.036	0.010	0.010
Polychlorinated biphenyls	1.33	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	2.69	0.009	0.007	0.009	0.009	0.007	0.007	0.007	0.007
Toluene	1.76	0.226	0.226	0.164	0.164	0.151	0.151	0.004	0.004
Total mercury (methyl mercury for air emissions)	2.03	0.006	0.004	0.006	0.006	0.006	0.006	0.005	0.005
Trichlorobenzenes	0.37	0.004	0.004	0.003	0.003	0.003	0.003	0.001	0.001
Xylene isomers (total)	11.55	0.840	0.836	0.832	0.831	0.832	0.832	0.034	0.034

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.1E-03	3.9E-02	5.1E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.6E-05	5.9E-04	7.6E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.1E-06	6.8E-05	9.1E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.3E-04	4.9E-03	6.3E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	8.0E-04	6.0E-03	8.0E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.5E-04	6.6E-03	8.5E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging
Alternative D2, SMU 3
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		207		7		5		5	
Benzene	1.77	0.343	0.343	0.265	0.265	0.265	0.265	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.016	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.043	0.043	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.027	0.027	0.026	0.026	0.026	0.026	0.001	0.001

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				55	5		
Benzene	0.01	100		3.1E-04	2.8E-05	3.1E-04	2.8E-05
Benzo[a]pyrene	0.08	1,096,478		4.4E-03	4.0E-04	4.0E-03	3.9E-04
Chlorobenzene	0.01	500		3.5E-04	3.2E-05	3.5E-04	3.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2,399		1.5E-03	1.4E-04	1.5E-03	1.4E-04
Ethylbenzene	0.01	588		6.6E-04	5.9E-05	6.6E-04	5.9E-05
Fluorene	0.03	15,136		1.8E-03	1.6E-04	1.7E-03	1.6E-04
Hexachlorobenzenes	0.11	1,513,561		6.0E-03	5.4E-04	5.4E-03	5.4E-04
Naphthalene	0.07	2,344		4.1E-03	3.7E-04	4.1E-03	3.7E-04
Phenanthrene	0.08	342,748		4.6E-03	4.1E-04	4.2E-03	4.1E-04
Phenol	0.08	100		4.5E-03	4.1E-04	4.5E-03	4.1E-04
Polychlorinated biphenyls	0.37	1,380,384		2.0E-02	1.8E-03	1.8E-02	1.8E-03
Pyrene	0.19	208,930		1.0E-02	9.3E-04	9.5E-03	9.2E-04
Toluene	0.00	490		2.7E-04	2.4E-05	2.7E-04	2.4E-05
Total mercury (methyl mercury for air emissions)	7.46	497,214	6,961	4.1E-01	3.7E-02	3.8E-01	3.7E-02
Trichlorobenzenes	0.02	18,197		9.4E-04	8.5E-05	9.2E-04	8.5E-05
Xylene isomers (total)	0.09	1,413		4.9E-03	4.4E-04	4.9E-03	4.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging
Alternative D2, SMU 4
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.5E-03	5.5E-03
Benzo[a]pyrene	8.0E-02	8.0E-02
Chlorobenzene	6.3E-03	6.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.7E-02	2.7E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	7.5E-02	7.5E-02
Phenanthrene	8.3E-02	8.3E-02
Phenol	8.1E-02	8.1E-02
Polychlorinated biphenyls	3.7E-01	3.7E-01
Pyrene	1.9E-01	1.9E-01
Toluene	4.9E-03	4.9E-03
Total mercury (methyl mercury for air emissions)	7.5E+00	7.5E+00
Trichlorobenzenes	1.7E-02	1.7E-02
Xylene isomers (total)	8.9E-02	8.9E-02

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.01	5.5E-01	5.1E-01	5.0E-01	4.9E-01	5.1E-01	5.0E-01
Benzo[a]pyrene	0.08	8.0E+00	1.9E-02	1.9E-02	3.9E-02	1.6E-02	1.6E-02
Chlorobenzene	0.01	6.3E-01	3.9E-01	3.8E-01	3.7E-01	3.9E-01	3.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2.7E+00	6.5E-01	6.5E-01	6.3E-01	6.5E-01	6.5E-01
Ethylbenzene	0.01	1.2E+00	6.8E-01	6.7E-01	6.5E-01	6.8E-01	6.7E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.4E-02	2.3E-02	5.1E-02	2.0E-02	1.9E-02
Naphthalene	0.07	7.5E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Phenanthrene	0.08	8.3E+00	3.2E-02	3.1E-02	5.2E-02	2.8E-02	2.7E-02
Phenol	0.08	8.1E+00	7.4E+00	7.4E+00	7.1E+00	7.4E+00	7.4E+00
Polychlorinated biphenyls	0.37	3.7E+01	8.3E-02	8.3E-02	1.8E-01	6.9E-02	6.9E-02
Pyrene	0.19	1.9E+01	9.7E-02	9.6E-02	1.4E-01	8.6E-02	8.5E-02
Toluene	0.00	4.9E-01	3.0E-01	3.0E-01	2.9E-01	3.0E-01	3.0E-01
Total mercury (methyl mercury for air emissions)	7.46	7.5E+02	2.4E+00	2.4E+00	4.2E+00	2.0E+00	2.0E+00
Trichlorobenzenes	0.02	1.7E+00	6.9E-02	6.8E-02	7.1E-02	6.8E-02	6.7E-02
Xylene isomers (total)	0.09	8.9E+00	3.1E+00	3.1E+00	3.0E+00	3.1E+00	3.0E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		337		12		8		8	
Benzene	0.01	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.01	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	0.07	0.006	0.006	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.08	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.08	0.025	0.025	0.016	0.016	0.011	0.011	0.003	0.003
Polychlorinated biphenyls	0.37	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Pyrene	0.19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	7.46	0.045	0.028	0.040	0.040	0.040	0.040	0.039	0.039
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.09	0.011	0.011	0.011	0.011	0.011	0.011	0.000	0.000

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	20
Total dredge volume in cy:	124,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	827
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				31	3		
Benzene	0.00	100		1.2E-04	1.1E-05	1.2E-04	1.1E-05
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	3.1E-04	3.1E-03	3.0E-04
Chlorobenzene	0.00	500		1.2E-04	1.1E-05	1.2E-04	1.1E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	1.1E-04	1.2E-03	1.1E-04
Ethylbenzene	0.00	588		1.2E-04	1.1E-05	1.2E-04	1.1E-05
Fluorene	0.05	15,136		1.7E-03	1.6E-04	1.6E-03	1.6E-04
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	2.2E-05	2.2E-04	2.2E-05
Naphthalene	0.14	2,344		4.2E-03	4.0E-04	4.2E-03	4.0E-04
Phenanthrene	0.14	342,748		4.4E-03	4.2E-04	4.2E-03	4.1E-04
Phenol	0.02	100		5.3E-04	5.1E-05	5.3E-04	5.1E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	7.3E-04	7.3E-03	7.3E-04
Pyrene	0.21	208,930		6.5E-03	6.2E-04	6.3E-03	6.2E-04
Toluene	0.02	490		6.5E-04	6.1E-05	6.5E-04	6.1E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	2.2E-03	2.2E-02	2.2E-03
Trichlorobenzenes	0.02	18,197		6.9E-04	6.6E-05	6.9E-04	6.6E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	1.1E-05	1.2E-04	1.1E-05

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	20
Total dredge volume in cy:	124,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	827
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	20
Total dredge volume in cy:	124,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	827
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.6E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.7E-01	2.6E-01	2.7E-01	2.7E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.5E-01	2.4E-01	2.5E-01	2.5E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.2E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.1E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.8E-01	1.3E-01	2.5E-01	2.5E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	3.8E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.1E-01
Toluene	0.02	2.1E+00	1.5E+00	1.5E+00	1.4E+00	1.5E+00	1.5E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.2E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	20
Total dredge volume in cy:	124,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	827
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		183		6		5		5	
Benzene	0.00	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.008	0.008	0.005	0.005	0.005	0.005	0.001	0.001
Phenanthrene	0.14	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.02	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.02	0.003	0.003	0.002	0.002	0.002	0.002	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.005	0.004	0.003	0.003	0.003	0.003	0.003	0.003
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	28
Total dredge volume in cy:	234,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,560
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				42	3		
Benzene	0.09	100		3.8E-03	3.0E-04	3.8E-03	3.0E-04
Benzo[a]pyrene	1.56	1,096,478		6.5E-02	5.2E-03	5.8E-02	5.2E-03
Chlorobenzene	0.33	500		1.4E-02	1.1E-03	1.4E-02	1.1E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	2,399		1.9E-02	1.5E-03	1.9E-02	1.5E-03
Ethylbenzene	0.21	588		8.7E-03	7.0E-04	8.7E-03	7.0E-04
Fluorene	1.24	15,136		5.2E-02	4.1E-03	5.1E-02	4.1E-03
Hexachlorobenzenes	0.02	1,513,561		9.3E-04	7.5E-05	8.3E-04	7.4E-05
Naphthalene	2.83	2,344		1.2E-01	9.5E-03	1.2E-01	9.5E-03
Phenanthrene	5.51	342,748		2.3E-01	1.8E-02	2.1E-01	1.8E-02
Phenol	0.06	100		2.6E-03	2.1E-04	2.6E-03	2.1E-04
Polychlorinated biphenyls	0.89	1,380,384		3.7E-02	3.0E-03	3.3E-02	2.9E-03
Pyrene	3.67	208,930		1.5E-01	1.2E-02	1.4E-01	1.2E-02
Toluene	0.08	490		3.2E-03	2.6E-04	3.2E-03	2.6E-04
Total mercury (methyl mercury for air emissions)	2.24	366,368	6,961	9.3E-02	7.5E-03	8.5E-02	7.4E-03
Trichlorobenzenes	0.38	18,197		1.6E-02	1.3E-03	1.6E-02	1.3E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	1.1E-03	1.3E-02	1.1E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	28
Total dredge volume in cy:	234,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,560
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	9.0E-02	9.0E-02
Benzo[a]pyrene	1.6E+00	1.6E+00
Chlorobenzene	3.3E-01	3.3E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	4.5E-01	4.5E-01
Ethylbenzene	2.1E-01	2.1E-01
Fluorene	1.2E+00	1.2E+00
Hexachlorobenzenes	2.2E-02	2.2E-02
Naphthalene	2.8E+00	2.8E+00
Phenanthrene	5.5E+00	5.5E+00
Phenol	6.3E-02	6.3E-02
Polychlorinated biphenyls	8.9E-01	8.9E-01
Pyrene	3.7E+00	3.7E+00
Toluene	7.7E-02	7.7E-02
Total mercury (methyl mercury for air emissions)	2.2E+00	2.2E+00
Trichlorobenzenes	3.8E-01	3.8E-01
Xylene isomers (total)	3.2E-01	3.2E-01

Attachment D - Predicted Quality Impacts Associated with Dredging
Alternative D2, SMU 6
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	28
Total dredge volume in cy:	234,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,560
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.09	9.0E+00	7.9E+00	7.7E+00	7.6E+00	7.9E+00	7.7E+00
Benzo[a]pyrene	1.56	1.6E+02	4.7E-01	4.6E-01	5.6E-01	3.6E-01	3.6E-01
Chlorobenzene	0.33	3.3E+01	1.8E+01	1.7E+01	1.7E+01	1.7E+01	1.7E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	4.5E+01	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.3E+00
Ethylbenzene	0.21	2.1E+01	1.0E+01	1.0E+01	9.9E+00	1.0E+01	1.0E+01
Fluorene	1.24	1.2E+02	4.6E+00	4.6E+00	4.5E+00	4.5E+00	4.4E+00
Hexachlorobenzenes	0.02	2.2E+00	6.4E-03	6.3E-03	7.8E-03	5.0E-03	4.9E-03
Naphthalene	2.83	2.8E+02	5.4E+01	5.4E+01	5.2E+01	5.4E+01	5.3E+01
Phenanthrene	5.51	5.5E+02	2.2E+00	2.2E+00	2.6E+00	1.9E+00	1.8E+00
Phenol	0.06	6.3E+00	5.5E+00	5.5E+00	5.3E+00	5.5E+00	5.5E+00
Polychlorinated biphenyls	0.89	8.9E+01	2.6E-01	2.6E-01	3.1E-01	2.0E-01	2.0E-01
Pyrene	3.67	3.7E+02	1.9E+00	1.9E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.08	7.7E+00	4.1E+00	4.1E+00	4.0E+00	4.1E+00	4.1E+00
Total mercury (methyl mercury for air emissions)	2.24	2.2E+02	8.9E-01	8.9E-01	1.0E+00	7.3E-01	7.3E-01
Trichlorobenzenes	0.38	3.8E+01	1.2E+00	1.2E+00	1.2E+00	1.2E+00	1.2E+00
Xylene isomers (total)	0.32	3.2E+01	8.9E+00	8.8E+00	8.6E+00	8.9E+00	8.8E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	28
Total dredge volume in cy:	234,000
Dredge cut in feet (either average or to max conc):	8.7
Post-dredge water depth (either average or to max conc.) in feet:	8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,560
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		240		8		6		6	
Benzene	0.09	0.019	0.019	0.014	0.014	0.014	0.014	0.000	0.000
Benzo[a]pyrene	1.56	0.006	0.004	0.006	0.006	0.006	0.000	0.006	0.000
Chlorobenzene	0.33	0.042	0.042	0.042	0.042	0.042	0.042	0.001	0.001
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.45	0.021	0.021	0.013	0.013	0.012	0.012	0.002	0.002
Ethylbenzene	0.21	0.025	0.025	0.005	0.005	0.004	0.004	0.002	0.002
Fluorene	1.24	0.015	0.014	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.83	0.137	0.135	0.088	0.088	0.088	0.088	0.018	0.018
Phenanthrene	5.51	0.024	0.016	0.023	0.023	0.019	0.019	0.018	0.018
Phenol	0.06	0.013	0.013	0.008	0.008	0.006	0.006	0.002	0.002
Polychlorinated biphenyls	0.89	0.004	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Pyrene	3.67	0.017	0.012	0.017	0.016	0.012	0.012	0.012	0.012
Toluene	0.08	0.010	0.010	0.007	0.007	0.007	0.007	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.24	0.010	0.006	0.008	0.008	0.008	0.008	0.008	0.008
Trichlorobenzenes	0.38	0.004	0.004	0.004	0.004	0.003	0.003	0.002	0.002
Xylene isomers (total)	0.32	0.022	0.022	0.022	0.022	0.022	0.022	0.001	0.001

Attachment D - Predicted Quality Impacts Associated with Dredging
Alternative D2, SMU 7
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				38	4		
Benzene	1.21	100		4.6E-02	5.4E-03	4.6E-02	5.4E-03
Benzo[a]pyrene	1.75	1,096,478		6.7E-02	7.8E-03	6.1E-02	7.7E-03
Chlorobenzene	12.91	500		4.9E-01	5.7E-02	4.9E-01	5.7E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	2,399		2.1E+00	2.5E-01	2.1E+00	2.5E-01
Ethylbenzene	1.01	588		3.9E-02	4.5E-03	3.9E-02	4.5E-03
Fluorene	6.30	15,136		2.4E-01	2.8E-02	2.4E-01	2.8E-02
Hexachlorobenzenes	0.97	1,513,561		3.7E-02	4.3E-03	3.4E-02	4.2E-03
Naphthalene	26.93	2,344		1.0E+00	1.2E-01	1.0E+00	1.2E-01
Phenanthrene	6.03	342,748		2.3E-01	2.7E-02	2.1E-01	2.7E-02
Phenol	0.09	100		3.6E-03	4.2E-04	3.6E-03	4.2E-04
Polychlorinated biphenyls	1.67	1,380,384		6.4E-02	7.4E-03	5.8E-02	7.3E-03
Pyrene	3.98	208,930		1.5E-01	1.8E-02	1.4E-01	1.8E-02
Toluene	2.57	490		9.8E-02	1.1E-02	9.8E-02	1.1E-02
Total mercury (methyl mercury for air emissions)	20.54	409,471	6,961	7.9E-01	9.1E-02	7.3E-01	9.0E-02
Trichlorobenzenes	9.26	18,197		3.5E-01	4.1E-02	3.5E-01	4.1E-02
Xylene isomers (total)	9.94	1,413		3.8E-01	4.4E-02	3.8E-01	4.4E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative D2, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide D2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 13.4
Total dredge volume in cy: 89,000
Dredge cut in feet (either average or to max conc): 4.1
Post-dredge water depth (either average or to max conc.) in feet: 7.3

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 593

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 112 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 453,248

Avg Sed Specific gravity 2.5

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	5.6E+01	5.6E+01
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	6.3E+00	6.3E+00
Hexachlorobenzenes	9.7E-01	9.7E-01
Naphthalene	2.7E+01	2.7E+01
Phenanthrene	6.0E+00	6.0E+00
Phenol	9.5E-02	9.5E-02
Polychlorinated biphenyls	1.7E+00	1.7E+00
Pyrene	4.0E+00	4.0E+00
Toluene	2.6E+00	2.6E+00
Total mercury (methyl mercury for air emissions)	2.1E+01	2.1E+01
Trichlorobenzenes	9.3E+00	9.3E+00
Xylene isomers (total)	9.9E+00	9.9E+00

Attachment D - Predicted Quality Impacts Associated with Dredging
Alternative D2, SMU 7
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.21	1.2E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	1.75	1.7E+02	4.5E-01	4.5E-01	7.1E-01	3.6E-01	3.6E-01
Chlorobenzene	12.91	1.3E+03	7.3E+02	7.2E+02	7.0E+02	7.3E+02	7.2E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	5.6E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	1.01	1.0E+02	5.3E+01	5.2E+01	5.1E+01	5.3E+01	5.2E+01
Fluorene	6.30	6.3E+02	2.6E+01	2.6E+01	2.6E+01	2.5E+01	2.5E+01
Hexachlorobenzenes	0.97	9.7E+01	2.4E-01	2.3E-01	3.8E-01	1.9E-01	1.9E-01
Naphthalene	26.93	2.7E+03	5.7E+02	5.6E+02	5.5E+02	5.6E+02	5.6E+02
Phenanthrene	6.03	6.0E+02	2.3E+00	2.3E+00	3.1E+00	1.9E+00	1.9E+00
Phenol	0.09	9.5E+00	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Polychlorinated biphenyls	1.67	1.7E+02	4.1E-01	4.1E-01	6.6E-01	3.3E-01	3.3E-01
Pyrene	3.98	4.0E+02	2.0E+00	2.0E+00	2.5E+00	1.7E+00	1.7E+00
Toluene	2.57	2.6E+02	1.5E+02	1.4E+02	1.4E+02	1.5E+02	1.4E+02
Total mercury (methyl mercury for air emissions)	20.54	2.1E+03	7.2E+00	7.2E+00	1.0E+01	6.0E+00	6.0E+00
Trichlorobenzenes	9.26	9.3E+02	3.2E+01	3.2E+01	3.2E+01	3.1E+01	3.1E+01
Xylene isomers (total)	9.94	9.9E+02	3.1E+02	3.0E+02	2.9E+02	3.1E+02	3.0E+02

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide D2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		378		12		8		8	
Benzene	1.21	0.405	0.405	0.313	0.313	0.313	0.313	0.007	0.007
Benzo[a]pyrene	1.75	0.009	0.005	0.009	0.009	0.009	0.000	0.009	0.000
Chlorobenzene	12.91	2.766	2.757	2.766	2.766	2.766	2.766	0.061	0.061
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	4.564	4.495	2.765	2.764	2.622	2.622	0.264	0.264
Ethylbenzene	1.01	0.201	0.200	0.036	0.036	0.034	0.034	0.013	0.013
Fluorene	6.30	0.124	0.114	0.029	0.029	0.029	0.029	0.028	0.028
Hexachlorobenzenes	0.97	0.005	0.003	0.005	0.005	0.005	0.005	0.005	0.005
Naphthalene	26.93	2.228	2.195	1.426	1.426	1.426	1.426	0.267	0.267
Phenanthrene	6.03	0.035	0.020	0.035	0.034	0.028	0.028	0.027	0.027
Phenol	0.09	0.032	0.032	0.020	0.020	0.014	0.014	0.004	0.004
Polychlorinated biphenyls	1.67	0.009	0.005	0.009	0.008	0.009	0.009	0.009	0.009
Pyrene	3.98	0.025	0.016	0.025	0.024	0.018	0.018	0.018	0.018
Toluene	2.57	0.555	0.554	0.403	0.403	0.372	0.372	0.011	0.011
Total mercury (methyl mercury for air emissions)	20.54	0.117	0.067	0.102	0.099	0.100	0.100	0.096	0.096
Trichlorobenzenes	9.26	0.160	0.145	0.140	0.139	0.104	0.104	0.058	0.058
Xylene isomers (total)	9.94	1.181	1.170	1.169	1.169	1.169	1.169	0.050	0.050

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				7	0		
Benzene	3.23	100		2.1E-02	9.9E-04	2.1E-02	9.9E-04
Benzo[a]pyrene	0.85	1,096,478		5.7E-03	2.6E-04	5.6E-03	2.6E-04
Chlorobenzene	11.64	500		7.7E-02	3.6E-03	7.7E-02	3.6E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	2,399		1.4E-01	6.4E-03	1.4E-01	6.4E-03
Ethylbenzene	3.85	588		2.6E-02	1.2E-03	2.6E-02	1.2E-03
Fluorene	5.30	15,136		3.5E-02	1.6E-03	3.5E-02	1.6E-03
Hexachlorobenzenes	0.14	1,513,561		9.6E-04	4.4E-05	9.4E-04	4.4E-05
Naphthalene	87.26	2,344		5.8E-01	2.7E-02	5.8E-01	2.7E-02
Phenanthrene	7.47	342,748		5.0E-02	2.3E-03	4.9E-02	2.3E-03
Phenol	3.39	100		2.3E-02	1.0E-03	2.3E-02	1.0E-03
Polychlorinated biphenyls	0.72	1,380,384		4.8E-03	2.2E-04	4.7E-03	2.2E-04
Pyrene	2.88	208,930		1.9E-02	8.9E-04	1.9E-02	8.9E-04
Toluene	8.39	490		5.6E-02	2.6E-03	5.6E-02	2.6E-03
Total mercury (methyl mercury for air emissions)	9.36	348,050	6,961	6.2E-02	2.9E-03	6.1E-02	2.9E-03
Trichlorobenzenes	5.79	18,197		3.9E-02	1.8E-03	3.8E-02	1.8E-03
Xylene isomers (total)	54.53	1,413		3.6E-01	1.7E-02	3.6E-01	1.7E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.2E+00	3.2E+00
Benzo[a]pyrene	8.5E-01	8.5E-01
Chlorobenzene	1.2E+01	1.2E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.1E+01	2.1E+01
Ethylbenzene	3.8E+00	3.8E+00
Fluorene	5.3E+00	5.3E+00
Hexachlorobenzenes	1.4E-01	1.4E-01
Naphthalene	8.7E+01	8.7E+01
Phenanthrene	7.5E+00	7.5E+00
Phenol	3.4E+00	3.4E+00
Polychlorinated biphenyls	7.2E-01	7.2E-01
Pyrene	2.9E+00	2.9E+00
Toluene	8.4E+00	8.4E+00
Total mercury (methyl mercury for air emissions)	9.4E+00	9.4E+00
Trichlorobenzenes	5.8E+00	5.8E+00
Xylene isomers (total)	5.5E+01	5.5E+01

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	3.23	3.2E+02	2.8E+02	2.7E+02	2.7E+02	2.8E+02	2.7E+02
Benzo[a]pyrene	0.85	8.5E+01	1.3E-01	1.3E-01	2.9E-01	1.0E-01	1.3E-01
Chlorobenzene	11.64	1.2E+03	6.1E+02	5.9E+02	5.8E+02	6.1E+02	5.9E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	2.1E+03	3.7E+02	3.7E+02	3.6E+02	3.7E+02	3.7E+02
Ethylbenzene	3.85	3.8E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02
Fluorene	5.30	5.3E+02	1.8E+01	1.8E+01	1.8E+01	1.8E+01	1.8E+01
Hexachlorobenzenes	0.14	1.4E+01	2.1E-02	2.0E-02	4.8E-02	1.6E-02	2.0E-02
Naphthalene	87.26	8.7E+03	1.6E+03	1.6E+03	1.6E+03	1.6E+03	1.6E+03
Phenanthrene	7.47	7.5E+02	1.9E+00	1.9E+00	3.3E+00	1.6E+00	1.9E+00
Phenol	3.39	3.4E+02	3.0E+02	2.9E+02	2.8E+02	3.0E+02	2.9E+02
Polychlorinated biphenyls	0.72	7.2E+01	1.1E-01	1.1E-01	2.4E-01	8.1E-02	1.1E-01
Pyrene	2.88	2.9E+02	1.0E+00	1.0E+00	1.5E+00	8.7E-01	1.0E+00
Toluene	8.39	8.4E+02	4.4E+02	4.3E+02	4.2E+02	4.4E+02	4.3E+02
Total mercury (methyl mercury for air emissions)	9.36	9.4E+02	2.4E+00	2.4E+00	4.1E+00	2.0E+00	2.4E+00
Trichlorobenzenes	5.79	5.8E+02	1.7E+01	1.6E+01	1.7E+01	1.6E+01	1.6E+01
Xylene isomers (total)	54.53	5.5E+03	1.5E+03	1.4E+03	1.4E+03	1.5E+03	1.4E+03

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		28		1		1		1	
Benzene	3.23	0.077	0.077	0.060	0.060	0.060	0.060	0.001	0.001
Benzo[a]pyrene	0.85	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	11.64	0.169	0.169	0.169	0.169	0.169	0.169	0.004	0.004
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	0.110	0.110	0.067	0.067	0.063	0.063	0.007	0.007
Ethylbenzene	3.85	0.051	0.051	0.009	0.009	0.009	0.009	0.003	0.003
Fluorene	5.30	0.007	0.007	0.002	0.002	0.002	0.002	0.002	0.002
Hexachlorobenzenes	0.14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	87.26	0.464	0.463	0.298	0.298	0.298	0.298	0.058	0.058
Phenanthrene	7.47	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
Phenol	3.39	0.083	0.083	0.053	0.053	0.037	0.037	0.010	0.010
Polychlorinated biphenyls	0.72	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	2.88	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	8.39	0.123	0.123	0.089	0.089	0.082	0.082	0.003	0.003
Total mercury (methyl mercury for air emissions)	9.36	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Trichlorobenzenes	5.79	0.006	0.006	0.006	0.006	0.004	0.004	0.002	0.002
Xylene isomers (total)	54.53	0.421	0.421	0.417	0.417	0.417	0.417	0.019	0.019

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	16
Total dredge volume in cy:	533,000
Dredge cut in feet (either average or to max conc):	21
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	3,553
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				7	1		
Benzene	1.03	100		7.7E-03	8.2E-04	7.7E-03	8.2E-04
Benzo[a]pyrene	0.66	1,096,478		5.0E-03	5.3E-04	4.9E-03	5.3E-04
Chlorobenzene	8.17	500		6.1E-02	6.5E-03	6.1E-02	6.5E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.75	2,399		1.3E-02	1.4E-03	1.3E-02	1.4E-03
Ethylbenzene	0.59	588		4.4E-03	4.7E-04	4.4E-03	4.7E-04
Fluorene	0.91	15,136		6.8E-03	7.2E-04	6.8E-03	7.2E-04
Hexachlorobenzenes	0.01	1,513,561		6.6E-05	7.0E-06	6.5E-05	7.0E-06
Naphthalene	50.62	2,344		3.8E-01	4.0E-02	3.8E-01	4.0E-02
Phenanthrene	3.06	342,748		2.3E-02	2.4E-03	2.3E-02	2.4E-03
Phenol	0.25	100		1.8E-03	2.0E-04	1.8E-03	2.0E-04
Polychlorinated biphenyls	0.89	1,380,384		6.6E-03	7.0E-04	6.5E-03	7.0E-04
Pyrene	1.55	208,930		1.2E-02	1.2E-03	1.1E-02	1.2E-03
Toluene	1.01	490		7.5E-03	8.0E-04	7.5E-03	8.0E-04
Total mercury (methyl mercury for air emissions)	1.20	464,067	6,961	9.0E-03	9.6E-04	8.9E-03	9.5E-04
Trichlorobenzenes	0.22	18,197		1.7E-03	1.8E-04	1.7E-03	1.8E-04
Xylene isomers (total)	6.60	1,413		4.9E-02	5.2E-03	4.9E-02	5.2E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	16
Total dredge volume in cy:	533,000
Dredge cut in feet (either average or to max conc):	21
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	3,553
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.0E+00	1.0E+00
Benzo[a]pyrene	6.6E-01	6.6E-01
Chlorobenzene	8.2E+00	8.2E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.8E+00	1.8E+00
Ethylbenzene	5.9E-01	5.9E-01
Fluorene	9.1E-01	9.1E-01
Hexachlorobenzenes	8.9E-03	8.9E-03
Naphthalene	5.1E+01	5.1E+01
Phenanthrene	3.1E+00	3.1E+00
Phenol	2.5E-01	2.5E-01
Polychlorinated biphenyls	8.9E-01	8.9E-01
Pyrene	1.5E+00	1.5E+00
Toluene	1.0E+00	1.0E+00
Total mercury (methyl mercury for air emissions)	1.2E+00	1.2E+00
Trichlorobenzenes	2.2E-01	2.2E-01
Xylene isomers (total)	6.6E+00	6.6E+00

Attachment D - Predicted Quality Impacts Associated with Dredging
Alternative E, SMU 2
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide E
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 16
Total dredge volume in cy: 533,000
Dredge cut in feet (either average or to max conc): 21
Post-dredge water depth (either average or to max conc.) in feet: 38

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 3,553

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 98%
Specific gravity: 2.52
TOC: 1.5%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 262 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,060,276

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.03	1.0E+02	9.3E+01	9.2E+01	9.0E+01	9.3E+01	9.2E+01
Benzo[a]pyrene	0.66	6.6E+01	1.1E-01	1.1E-01	3.0E-01	9.0E-02	9.0E-02
Chlorobenzene	8.17	8.2E+02	4.9E+02	4.8E+02	4.7E+02	4.9E+02	4.8E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.75	1.8E+02	4.0E+01	4.0E+01	3.9E+01	4.0E+01	3.9E+01
Ethylbenzene	0.59	5.9E+01	3.3E+01	3.2E+01	3.1E+01	3.2E+01	3.2E+01
Fluorene	0.91	9.1E+01	4.1E+00	4.0E+00	4.2E+00	4.0E+00	3.9E+00
Hexachlorobenzenes	0.01	8.9E-01	1.3E-03	1.3E-03	3.9E-03	1.1E-03	1.0E-03
Naphthalene	50.62	5.1E+03	1.2E+03	1.2E+03	1.1E+03	1.2E+03	1.2E+03
Phenanthrene	3.06	3.1E+02	9.3E-01	9.1E-01	1.8E+00	7.9E-01	7.8E-01
Phenol	0.25	2.5E+01	2.2E+01	2.2E+01	2.1E+01	2.2E+01	2.2E+01
Polychlorinated biphenyls	0.89	8.9E+01	1.4E-01	1.4E-01	4.0E-01	1.1E-01	1.1E-01
Pyrene	1.55	1.5E+02	6.7E-01	6.6E-01	1.1E+00	5.9E-01	5.8E-01
Toluene	1.01	1.0E+02	6.0E+01	6.0E+01	5.8E+01	6.0E+01	6.0E+01
Total mercury (methyl mercury for air emissions)	1.20	1.2E+02	3.0E-01	3.0E-01	6.5E-01	2.6E-01	2.6E-01
Trichlorobenzenes	0.22	2.2E+01	8.4E-01	8.3E-01	8.7E-01	8.2E-01	8.1E-01
Xylene isomers (total)	6.60	6.6E+02	2.2E+02	2.2E+02	2.1E+02	2.2E+02	2.2E+02

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	16
Total dredge volume in cy:	533,000
Dredge cut in feet (either average or to max conc):	21
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	3,553
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		67		2		1		1	
Benzene	1.03	0.062	0.062	0.048	0.048	0.048	0.048	0.001	0.001
Benzo[a]pyrene	0.66	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	8.17	0.325	0.325	0.325	0.325	0.325	0.325	0.007	0.007
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.75	0.028	0.028	0.017	0.017	0.016	0.016	0.001	0.001
Ethylbenzene	0.59	0.022	0.022	0.004	0.004	0.004	0.004	0.001	0.001
Fluorene	0.91	0.003	0.003	0.001	0.001	0.001	0.001	0.001	0.001
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	50.62	0.807	0.806	0.516	0.516	0.516	0.516	0.094	0.094
Phenanthrene	3.06	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002
Phenol	0.25	0.015	0.015	0.010	0.010	0.007	0.007	0.002	0.002
Polychlorinated biphenyls	0.89	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	1.55	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
Toluene	1.01	0.040	0.040	0.029	0.029	0.027	0.027	0.001	0.001
Total mercury (methyl mercury for air emissions)	1.20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.22	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Xylene isomers (total)	6.60	0.150	0.150	0.148	0.148	0.148	0.148	0.006	0.006

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	29
Total dredge volume in cy:	381,000
Dredge cut in feet (either average or to max conc):	8.2
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,540
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	2		
Benzene	1.18	100		2.5E-02	2.0E-03	2.5E-02	2.0E-03
Benzo[a]pyrene	0.04	1,096,478		9.1E-04	7.1E-05	8.8E-04	7.1E-05
Chlorobenzene	0.01	500		2.9E-04	2.3E-05	2.9E-04	2.3E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		7.6E-04	6.0E-05	7.6E-04	6.0E-05
Ethylbenzene	0.02	588		3.8E-04	3.0E-05	3.8E-04	3.0E-05
Fluorene	0.04	15,136		7.8E-04	6.1E-05	7.7E-04	6.1E-05
Hexachlorobenzenes	0.00	1,513,561		4.9E-05	3.9E-06	4.8E-05	3.9E-06
Naphthalene	0.17	2,344		3.6E-03	2.9E-04	3.6E-03	2.9E-04
Phenanthrene	0.04	342,748		9.2E-04	7.3E-05	9.0E-04	7.3E-05
Phenol	0.16	100		3.4E-03	2.6E-04	3.4E-03	2.6E-04
Polychlorinated biphenyls	0.29	1,380,384		6.2E-03	4.8E-04	6.0E-03	4.8E-04
Pyrene	0.06	208,930		1.3E-03	1.0E-04	1.3E-03	1.0E-04
Toluene	0.15	490		3.3E-03	2.6E-04	3.3E-03	2.6E-04
Total mercury (methyl mercury for air emissions)	0.43	696,100	6,961	9.2E-03	7.3E-04	9.0E-03	7.3E-04
Trichlorobenzenes	0.04	18,197		7.6E-04	6.0E-05	7.6E-04	6.0E-05
Xylene isomers (total)	0.20	1,413		4.2E-03	3.4E-04	4.2E-03	3.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	29
Total dredge volume in cy:	381,000
Dredge cut in feet (either average or to max conc):	8.2
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,540
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	4.2E-02	4.2E-02
Chlorobenzene	1.4E-02	1.4E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.6E-02	3.6E-02
Ethylbenzene	1.8E-02	1.8E-02
Fluorene	3.6E-02	3.6E-02
Hexachlorobenzenes	2.3E-03	2.3E-03
Naphthalene	1.7E-01	1.7E-01
Phenanthrene	4.3E-02	4.3E-02
Phenol	1.6E-01	1.6E-01
Polychlorinated biphenyls	2.9E-01	2.9E-01
Pyrene	5.9E-02	5.9E-02
Toluene	1.5E-01	1.5E-01
Total mercury (methyl mercury for air emissions)	4.3E-01	4.3E-01
Trichlorobenzenes	3.5E-02	3.5E-02
Xylene isomers (total)	2.0E-01	2.0E-01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	29
Total dredge volume in cy:	381,000
Dredge cut in feet (either average or to max conc):	8.2
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,540
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.18	1.2E+02	1.1E+02	1.1E+02	1.1E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	0.04	4.2E+00	1.9E-02	1.9E-02	2.9E-02	1.7E-02	1.6E-02
Chlorobenzene	0.01	1.4E+00	9.4E-01	9.2E-01	9.0E-01	9.4E-01	9.2E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.6E+00	1.1E+00	1.1E+00	1.1E+00	1.1E+00	1.1E+00
Ethylbenzene	0.02	1.8E+00	1.2E+00	1.1E+00	1.1E+00	1.2E+00	1.1E+00
Fluorene	0.04	3.6E+00	2.4E-01	2.4E-01	2.4E-01	2.4E-01	2.4E-01
Hexachlorobenzenes	0.00	2.3E-01	9.7E-04	9.5E-04	1.5E-03	8.4E-04	8.3E-04
Naphthalene	0.17	1.7E+01	5.3E+00	5.2E+00	5.1E+00	5.3E+00	5.2E+00
Phenanthrene	0.04	4.3E+00	2.8E-02	2.8E-02	3.8E-02	2.5E-02	2.5E-02
Phenol	0.16	1.6E+01	1.5E+01	1.5E+01	1.4E+01	1.5E+01	1.5E+01
Polychlorinated biphenyls	0.29	2.9E+01	1.2E-01	1.2E-01	1.9E-01	1.1E-01	1.1E-01
Pyrene	0.06	5.9E+00	5.0E-02	5.0E-02	6.3E-02	4.6E-02	4.6E-02
Toluene	0.15	1.5E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Total mercury (methyl mercury for air emissions)	0.43	4.3E+01	2.2E-01	2.2E-01	3.2E-01	1.9E-01	1.9E-01
Trichlorobenzenes	0.04	3.5E+00	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01
Xylene isomers (total)	0.20	2.0E+01	8.5E+00	8.4E+00	8.2E+00	8.5E+00	8.4E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	29
Total dredge volume in cy:	381,000
Dredge cut in feet (either average or to max conc):	8.2
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,540
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		122		4		3		3	
Benzene	1.18	0.134	0.134	0.104	0.104	0.104	0.104	0.003	0.003
Benzo[a]pyrene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.02	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.17	0.007	0.007	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.16	0.018	0.018	0.011	0.011	0.008	0.008	0.002	0.002
Polychlorinated biphenyls	0.29	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.06	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.15	0.013	0.013	0.009	0.009	0.009	0.009	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.43	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.20	0.010	0.010	0.010	0.010	0.010	0.010	0.000	0.000

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	2,170,000
Dredge cut in feet (either average or to max conc):	17.9
Post-dredge water depth (either average or to max conc.) in feet:	23.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,467
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				15	1		
Benzene	0.00	100		6.5E-05	3.2E-06	6.5E-05	3.2E-06
Benzo[a]pyrene	0.06	1,096,478		8.4E-04	4.1E-05	8.1E-04	4.1E-05
Chlorobenzene	0.01	500		1.4E-04	6.9E-06	1.4E-04	6.9E-06
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.07	2,399		1.0E-03	5.0E-05	1.0E-03	5.0E-05
Ethylbenzene	0.01	588		2.0E-04	1.0E-05	2.0E-04	1.0E-05
Fluorene	0.03	15,136		4.8E-04	2.4E-05	4.8E-04	2.4E-05
Hexachlorobenzenes	0.13	1,513,561		2.0E-03	9.8E-05	1.9E-03	9.8E-05
Naphthalene	0.04	2,344		5.9E-04	2.9E-05	5.9E-04	2.9E-05
Phenanthrene	0.13	342,748		1.9E-03	9.3E-05	1.9E-03	9.3E-05
Phenol	0.04	100		6.1E-04	3.0E-05	6.1E-04	3.0E-05
Polychlorinated biphenyls	0.56	1,380,384		8.5E-03	4.2E-04	8.2E-03	4.2E-04
Pyrene	0.20	208,930		3.0E-03	1.5E-04	2.9E-03	1.5E-04
Toluene	0.00	490		4.8E-05	2.3E-06	4.8E-05	2.3E-06
Total mercury (methyl mercury for air emissions)	32.06	497,214	6,961	4.8E-01	2.4E-02	4.7E-01	2.4E-02
Trichlorobenzenes	0.03	18,197		4.5E-04	2.2E-05	4.5E-04	2.2E-05
Xylene isomers (total)	0.26	1,413		3.9E-03	1.9E-04	3.9E-03	1.9E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	2,170,000
Dredge cut in feet (either average or to max conc):	17.9
Post-dredge water depth (either average or to max conc.) in feet:	23.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,467
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	4.3E-03	4.3E-03
Benzo[a]pyrene	5.6E-02	5.6E-02
Chlorobenzene	9.3E-03	9.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.8E-02	6.8E-02
Ethylbenzene	1.3E-02	1.3E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.3E-01	1.3E-01
Naphthalene	3.9E-02	3.9E-02
Phenanthrene	1.3E-01	1.3E-01
Phenol	4.0E-02	4.0E-02
Polychlorinated biphenyls	5.6E-01	5.6E-01
Pyrene	2.0E-01	2.0E-01
Toluene	3.2E-03	3.2E-03
Total mercury (methyl mercury for air emissions)	3.2E+01	3.2E+01
Trichlorobenzenes	3.0E-02	3.0E-02
Xylene isomers (total)	2.6E-01	2.6E-01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	2,170,000
Dredge cut in feet (either average or to max conc):	17.9
Post-dredge water depth (either average or to max conc.) in feet:	23.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,467
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	4.3E-01	3.9E-01	3.8E-01	3.8E-01	3.9E-01	3.8E-01
Benzo[a]pyrene	0.06	5.6E+00	1.3E-02	1.3E-02	2.7E-02	1.1E-02	1.1E-02
Chlorobenzene	0.01	9.3E-01	5.7E-01	5.5E-01	5.5E-01	5.7E-01	5.5E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.07	6.8E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Ethylbenzene	0.01	1.3E+00	7.7E-01	7.5E-01	7.4E-01	7.7E-01	7.5E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.13	1.3E+01	2.9E-02	2.8E-02	6.3E-02	2.4E-02	2.3E-02
Naphthalene	0.04	3.9E+00	9.5E-01	9.3E-01	9.2E-01	9.5E-01	9.2E-01
Phenanthrene	0.13	1.3E+01	4.8E-02	4.7E-02	7.9E-02	4.2E-02	4.1E-02
Phenol	0.04	4.0E+00	3.7E+00	3.6E+00	3.5E+00	3.7E+00	3.6E+00
Polychlorinated biphenyls	0.56	5.6E+01	1.3E-01	1.3E-01	2.7E-01	1.0E-01	1.0E-01
Pyrene	0.20	2.0E+01	1.0E-01	1.0E-01	1.5E-01	9.1E-02	9.0E-02
Toluene	0.00	3.2E-01	2.0E-01	1.9E-01	1.9E-01	2.0E-01	1.9E-01
Total mercury (methyl mercury for air emissions)	32.06	3.2E+03	1.0E+01	1.0E+01	1.8E+01	8.7E+00	8.7E+00
Trichlorobenzenes	0.03	3.0E+00	1.2E-01	1.2E-01	1.2E-01	1.2E-01	1.2E-01
Xylene isomers (total)	0.26	2.6E+01	9.1E+00	8.9E+00	8.8E+00	9.1E+00	8.9E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	2,170,000
Dredge cut in feet (either average or to max conc):	17.9
Post-dredge water depth (either average or to max conc.) in feet:	23.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,467
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		50		2		1		1	
Benzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.06	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.07	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Ethylbenzene	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenanthrene	0.13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	0.20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total mercury (methyl mercury for air emissions)	32.06	0.029	0.026	0.026	0.026	0.026	0.026	0.025	0.025
Trichlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.26	0.005	0.005	0.005	0.005	0.005	0.005	0.000	0.000

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	94
Total dredge volume in cy:	2,650,000
Dredge cut in feet (either average or to max conc):	17.5
Post-dredge water depth (either average or to max conc.) in feet:	28
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,667
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				12	1		
Benzene	0.05	100		6.1E-04	2.7E-05	6.1E-04	2.7E-05
Benzo[a]pyrene	1.51	1,096,478		1.8E-02	7.9E-04	1.7E-02	7.9E-04
Chlorobenzene	0.17	500		2.0E-03	8.7E-05	2.0E-03	8.7E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.30	2,399		3.5E-03	1.5E-04	3.5E-03	1.5E-04
Ethylbenzene	0.76	588		9.0E-03	3.9E-04	9.0E-03	3.9E-04
Fluorene	1.50	15,136		1.8E-02	7.8E-04	1.8E-02	7.8E-04
Hexachlorobenzenes	0.01	1,513,561		1.4E-04	6.1E-06	1.3E-04	6.1E-06
Naphthalene	3.73	2,344		4.4E-02	1.9E-03	4.4E-02	1.9E-03
Phenanthrene	6.65	342,748		7.9E-02	3.5E-03	7.7E-02	3.5E-03
Phenol	0.10	100		1.2E-03	5.5E-05	1.2E-03	5.5E-05
Polychlorinated biphenyls	0.59	1,380,384		7.0E-03	3.1E-04	6.8E-03	3.1E-04
Pyrene	4.10	208,930		4.9E-02	2.1E-03	4.8E-02	2.1E-03
Toluene	0.06	490		7.3E-04	3.2E-05	7.3E-04	3.2E-05
Total mercury (methyl mercury for air emissions)	1.38	366,368	6,961	1.6E-02	7.2E-04	1.6E-02	7.2E-04
Trichlorobenzenes	0.26	18,197		3.1E-03	1.4E-04	3.1E-03	1.4E-04
Xylene isomers (total)	1.22	1,413		1.5E-02	6.4E-04	1.5E-02	6.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	94
Total dredge volume in cy:	2,650,000
Dredge cut in feet (either average or to max conc):	17.5
Post-dredge water depth (either average or to max conc.) in feet:	28
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,667
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.1E-02	5.1E-02
Benzo[a]pyrene	1.5E+00	1.5E+00
Chlorobenzene	1.7E-01	1.7E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E-01	3.0E-01
Ethylbenzene	7.6E-01	7.6E-01
Fluorene	1.5E+00	1.5E+00
Hexachlorobenzenes	1.2E-02	1.2E-02
Naphthalene	3.7E+00	3.7E+00
Phenanthrene	6.6E+00	6.6E+00
Phenol	1.0E-01	1.0E-01
Polychlorinated biphenyls	5.9E-01	5.9E-01
Pyrene	4.1E+00	4.1E+00
Toluene	6.1E-02	6.1E-02
Total mercury (methyl mercury for air emissions)	1.4E+00	1.4E+00
Trichlorobenzenes	2.6E-01	2.6E-01
Xylene isomers (total)	1.2E+00	1.2E+00

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	94
Total dredge volume in cy:	2,650,000
Dredge cut in feet (either average or to max conc):	17.5
Post-dredge water depth (either average or to max conc.) in feet:	28
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,667
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.05	5.1E+00	4.5E+00	4.3E+00	4.3E+00	4.5E+00	4.3E+00
Benzo[a]pyrene	1.51	1.5E+02	4.5E-01	4.5E-01	5.5E-01	3.5E-01	3.5E-01
Chlorobenzene	0.17	1.7E+01	8.9E+00	8.7E+00	8.6E+00	8.9E+00	8.7E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.30	3.0E+01	5.6E+00	5.5E+00	5.4E+00	5.6E+00	5.5E+00
Ethylbenzene	0.76	7.6E+01	3.7E+01	3.6E+01	3.6E+01	3.7E+01	3.6E+01
Fluorene	1.50	1.5E+02	5.6E+00	5.5E+00	5.5E+00	5.4E+00	5.3E+00
Hexachlorobenzenes	0.01	1.2E+00	3.3E-03	3.2E-03	4.1E-03	2.6E-03	2.5E-03
Naphthalene	3.73	3.7E+02	7.2E+01	7.0E+01	6.9E+01	7.1E+01	6.9E+01
Phenanthrene	6.65	6.6E+02	2.7E+00	2.6E+00	3.1E+00	2.2E+00	2.2E+00
Phenol	0.10	1.0E+01	9.2E+00	9.1E+00	8.8E+00	9.2E+00	9.1E+00
Polychlorinated biphenyls	0.59	5.9E+01	1.7E-01	1.7E-01	2.1E-01	1.3E-01	1.3E-01
Pyrene	4.10	4.1E+02	2.1E+00	2.1E+00	2.3E+00	1.8E+00	1.8E+00
Toluene	0.06	6.1E+00	3.3E+00	3.2E+00	3.2E+00	3.3E+00	3.2E+00
Total mercury (methyl mercury for air emissions)	1.38	1.4E+02	5.5E-01	5.5E-01	6.3E-01	4.5E-01	4.5E-01
Trichlorobenzenes	0.26	2.6E+01	8.3E-01	8.1E-01	8.2E-01	8.1E-01	7.9E-01
Xylene isomers (total)	1.22	1.2E+02	3.5E+01	3.4E+01	3.3E+01	3.4E+01	3.3E+01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	94
Total dredge volume in cy:	2,650,000
Dredge cut in feet (either average or to max conc):	17.5
Post-dredge water depth (either average or to max conc.) in feet:	28
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,667
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		38		1		1		1	
Benzene	0.05	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	1.51	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	0.17	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.30	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.76	0.014	0.014	0.003	0.003	0.002	0.002	0.001	0.001
Fluorene	1.50	0.003	0.003	0.001	0.001	0.001	0.001	0.001	0.001
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	3.73	0.028	0.028	0.018	0.018	0.018	0.018	0.004	0.004
Phenanthrene	6.65	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.003
Phenol	0.10	0.003	0.003	0.002	0.002	0.002	0.002	0.000	0.000
Polychlorinated biphenyls	0.59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	4.10	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
Toluene	0.06	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	1.38	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.26	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	1.22	0.013	0.013	0.013	0.013	0.013	0.013	0.001	0.001

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	1,485,000
Dredge cut in feet (either average or to max conc):	24.2
Post-dredge water depth (either average or to max conc.) in feet:	25
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				11	1		
Benzene	0.39	100		4.3E-03	3.0E-04	4.3E-03	3.0E-04
Benzo[a]pyrene	1.58	1,096,478		1.8E-02	1.2E-03	1.7E-02	1.2E-03
Chlorobenzene	3.79	500		4.2E-02	2.9E-03	4.2E-02	2.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	2,399		1.8E-01	1.2E-02	1.7E-01	1.2E-02
Ethylbenzene	0.78	588		8.7E-03	6.0E-04	8.7E-03	6.0E-04
Fluorene	5.77	15,136		6.4E-02	4.4E-03	6.4E-02	4.4E-03
Hexachlorobenzenes	0.25	1,513,561		2.8E-03	1.9E-04	2.7E-03	1.9E-04
Naphthalene	22.84	2,344		2.6E-01	1.8E-02	2.6E-01	1.8E-02
Phenanthrene	13.65	342,748		1.5E-01	1.1E-02	1.5E-01	1.0E-02
Phenol	0.08	100		8.6E-04	5.9E-05	8.6E-04	5.9E-05
Polychlorinated biphenyls	0.98	1,380,384		1.1E-02	7.5E-04	1.1E-02	7.5E-04
Pyrene	5.80	208,930		6.5E-02	4.5E-03	6.4E-02	4.5E-03
Toluene	0.87	490		9.8E-03	6.7E-04	9.8E-03	6.7E-04
Total mercury (methyl mercury for air emissions)	7.93	409,471	6,961	8.9E-02	6.1E-03	8.7E-02	6.1E-03
Trichlorobenzenes	2.44	18,197		2.7E-02	1.9E-03	2.7E-02	1.9E-03
Xylene isomers (total)	4.22	1,413		4.7E-02	3.3E-03	4.7E-02	3.3E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	1,485,000
Dredge cut in feet (either average or to max conc):	24.2
Post-dredge water depth (either average or to max conc.) in feet:	25
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.9E-01	3.9E-01
Benzo[a]pyrene	1.6E+00	1.6E+00
Chlorobenzene	3.8E+00	3.8E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.6E+01	1.6E+01
Ethylbenzene	7.8E-01	7.8E-01
Fluorene	5.8E+00	5.8E+00
Hexachlorobenzenes	2.5E-01	2.5E-01
Naphthalene	2.3E+01	2.3E+01
Phenanthrene	1.4E+01	1.4E+01
Phenol	7.7E-02	7.7E-02
Polychlorinated biphenyls	9.8E-01	9.8E-01
Pyrene	5.8E+00	5.8E+00
Toluene	8.7E-01	8.7E-01
Total mercury (methyl mercury for air emissions)	7.9E+00	7.9E+00
Trichlorobenzenes	2.4E+00	2.4E+00
Xylene isomers (total)	4.2E+00	4.2E+00

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	1,485,000
Dredge cut in feet (either average or to max conc):	24.2
Post-dredge water depth (either average or to max conc.) in feet:	25
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.39	3.9E+01	3.5E+01	3.4E+01	3.3E+01	3.5E+01	3.4E+01
Benzo[a]pyrene	1.58	1.6E+02	4.1E-01	4.1E-01	6.4E-01	3.3E-01	3.3E-01
Chlorobenzene	3.79	3.8E+02	2.1E+02	2.1E+02	2.1E+02	2.1E+02	2.1E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	1.6E+03	3.2E+02	3.2E+02	3.1E+02	3.2E+02	3.2E+02
Ethylbenzene	0.78	7.8E+01	4.1E+01	4.0E+01	3.9E+01	4.1E+01	4.0E+01
Fluorene	5.77	5.8E+02	2.4E+01	2.3E+01	2.3E+01	2.3E+01	2.3E+01
Hexachlorobenzenes	0.25	2.5E+01	6.2E-02	6.1E-02	9.9E-02	4.9E-02	4.8E-02
Naphthalene	22.84	2.3E+03	4.8E+02	4.7E+02	4.6E+02	4.8E+02	4.7E+02
Phenanthrene	13.65	1.4E+03	5.2E+00	5.1E+00	7.1E+00	4.4E+00	4.3E+00
Phenol	0.08	7.7E+00	6.9E+00	6.9E+00	6.6E+00	6.9E+00	6.9E+00
Polychlorinated biphenyls	0.98	9.8E+01	2.4E-01	2.4E-01	3.9E-01	1.9E-01	1.9E-01
Pyrene	5.80	5.8E+02	2.9E+00	2.9E+00	3.7E+00	2.5E+00	2.5E+00
Toluene	0.87	8.7E+01	5.0E+01	4.9E+01	4.8E+01	5.0E+01	4.9E+01
Total mercury (methyl mercury for air emissions)	7.93	7.9E+02	2.8E+00	2.8E+00	3.9E+00	2.3E+00	2.3E+00
Trichlorobenzenes	2.44	2.4E+02	8.4E+00	8.3E+00	8.4E+00	8.2E+00	8.1E+00
Xylene isomers (total)	4.22	4.2E+02	1.3E+02	1.3E+02	1.2E+02	1.3E+02	1.3E+02

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative E, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide E
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	1,485,000
Dredge cut in feet (either average or to max conc):	24.2
Post-dredge water depth (either average or to max conc.) in feet:	25
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	262	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,060,276	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		66		2		1		1	
Benzene	0.39	0.023	0.023	0.017	0.017	0.017	0.017	0.000	0.000
Benzo[a]pyrene	1.58	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	3.79	0.141	0.141	0.141	0.141	0.141	0.141	0.003	0.003
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	0.222	0.221	0.135	0.135	0.128	0.128	0.013	0.013
Ethylbenzene	0.78	0.027	0.027	0.005	0.005	0.005	0.005	0.002	0.002
Fluorene	5.77	0.020	0.019	0.005	0.005	0.005	0.005	0.004	0.004
Hexachlorobenzenes	0.25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	22.84	0.327	0.327	0.210	0.210	0.210	0.210	0.039	0.039
Phenanthrene	13.65	0.014	0.012	0.014	0.014	0.011	0.011	0.010	0.010
Phenol	0.08	0.005	0.005	0.003	0.003	0.002	0.002	0.001	0.001
Polychlorinated biphenyls	0.98	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	5.80	0.006	0.006	0.006	0.006	0.004	0.004	0.004	0.004
Toluene	0.87	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	7.93	0.008	0.007	0.007	0.007	0.007	0.007	0.006	0.006
Trichlorobenzenes	2.44	0.007	0.007	0.006	0.006	0.005	0.005	0.003	0.003
Xylene isomers (total)	4.22	0.087	0.087	0.086	0.086	0.086	0.086	0.004	0.004

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				48	3		
Benzene	3.97	100		1.9E-01	1.2E-02	1.9E-01	1.2E-02
Benzo[a]pyrene	1.18	1,096,478		5.6E-02	3.6E-03	5.0E-02	3.5E-03
Chlorobenzene	32.26	500		1.5E+00	9.8E-02	1.5E+00	9.8E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	2,399		3.1E+00	1.9E-01	3.1E+00	1.9E-01
Ethylbenzene	2.69	588		1.3E-01	8.1E-03	1.3E-01	8.1E-03
Fluorene	3.33	15,136		1.6E-01	1.0E-02	1.6E-01	1.0E-02
Hexachlorobenzenes	0.40	1,513,561		1.9E-02	1.2E-03	1.7E-02	1.2E-03
Naphthalene	77.70	2,344		3.7E+00	2.3E-01	3.7E+00	2.3E-01
Phenanthrene	6.08	342,748		2.9E-01	1.8E-02	2.6E-01	1.8E-02
Phenol	2.67	100		1.3E-01	8.1E-03	1.3E-01	8.1E-03
Polychlorinated biphenyls	1.20	1,380,384		5.7E-02	3.6E-03	5.0E-02	3.6E-03
Pyrene	4.29	208,930		2.1E-01	1.3E-02	1.9E-01	1.3E-02
Toluene	7.43	490		3.5E-01	2.2E-02	3.5E-01	2.2E-02
Total mercury (methyl mercury for air emissions)	13.12	348,050	6,961	6.3E-01	4.0E-02	5.7E-01	3.9E-02
Trichlorobenzenes	20.70	18,197		9.9E-01	6.3E-02	9.7E-01	6.3E-02
Xylene isomers (total)	45.47	1,413		2.2E+00	1.4E-01	2.2E+00	1.4E-01

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	4.0E+00	4.0E+00
Benzo[a]pyrene	1.2E+00	1.2E+00
Chlorobenzene	3.2E+01	3.2E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.4E+01	6.4E+01
Ethylbenzene	2.7E+00	2.7E+00
Fluorene	3.3E+00	3.3E+00
Hexachlorobenzenes	4.0E-01	4.0E-01
Naphthalene	7.8E+01	7.8E+01
Phenanthrene	6.1E+00	6.1E+00
Phenol	2.7E+00	2.7E+00
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	4.3E+00	4.3E+00
Toluene	7.4E+00	7.4E+00
Total mercury (methyl mercury for air emissions)	1.3E+01	1.3E+01
Trichlorobenzenes	2.1E+01	2.1E+01
Xylene isomers (total)	4.5E+01	4.5E+01

SMU (Insert Value: 1 through 7): 1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F1
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 45
Total dredge volume in cy: 354,000
Dredge cut in feet (either average or to max conc): 4.9
Post-dredge water depth (either average or to max conc.) in feet: 5.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 2,360

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 92%
Specific gravity: 2.36
TOC: 2.0%
In Situ Sediment Density (% solids by weight) 41%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 112 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 453,248

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	3.97	4.0E+02	3.5E+02	3.4E+02	3.3E+02	3.5E+02	3.4E+02
Benzo[a]pyrene	1.18	1.2E+02	1.8E-01	1.8E-01	4.1E-01	1.4E-01	1.4E-01
Chlorobenzene	32.26	3.2E+03	1.7E+03	1.7E+03	1.6E+03	1.7E+03	1.6E+03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	6.4E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	2.69	2.7E+02	1.3E+02	1.3E+02	1.2E+02	1.3E+02	1.3E+02
Fluorene	3.33	3.3E+02	1.1E+01	1.1E+01	1.2E+01	1.1E+01	1.1E+01
Hexachlorobenzenes	0.40	4.0E+01	5.7E-02	5.5E-02	1.3E-01	4.4E-02	4.2E-02
Naphthalene	77.70	7.8E+03	1.4E+03	1.4E+03	1.4E+03	1.4E+03	1.4E+03
Phenanthrene	6.08	6.1E+02	1.6E+00	1.5E+00	2.7E+00	1.3E+00	1.3E+00
Phenol	2.67	2.7E+02	2.3E+02	2.3E+02	2.2E+02	2.3E+02	2.3E+02
Polychlorinated biphenyls	1.20	1.2E+02	1.8E-01	1.8E-01	4.0E-01	1.4E-01	1.4E-01
Pyrene	4.29	4.3E+02	1.5E+00	1.5E+00	2.3E+00	1.3E+00	1.3E+00
Toluene	7.43	7.4E+02	3.9E+02	3.8E+02	3.8E+02	3.9E+02	3.8E+02
Total mercury (methyl mercury for air emissions)	13.12	1.3E+03	3.4E+00	3.4E+00	5.8E+00	2.8E+00	2.8E+00
Trichlorobenzenes	20.70	2.1E+03	6.0E+01	5.9E+01	6.1E+01	5.8E+01	5.7E+01
Xylene isomers (total)	45.47	4.5E+03	1.2E+03	1.2E+03	1.2E+03	1.2E+03	1.2E+03

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	45
Total dredge volume in cy:	354,000
Dredge cut in feet (either average or to max conc):	4.9
Post-dredge water depth (either average or to max conc.) in feet:	5.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,360
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		273		8		6		6	
Benzene	3.97	0.935	0.934	0.722	0.722	0.722	0.722	0.016	0.016
Benzo[a]pyrene	1.18	0.004	0.002	0.004	0.004	0.004	0.000	0.004	0.000
Chlorobenzene	32.26	4.598	4.585	4.598	4.597	4.598	4.598	0.104	0.104
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	64.13	3.322	3.279	2.018	2.017	1.915	1.915	0.205	0.205
Ethylbenzene	2.69	0.353	0.352	0.063	0.063	0.060	0.060	0.023	0.023
Fluorene	3.33	0.041	0.038	0.010	0.010	0.010	0.010	0.010	0.010
Hexachlorobenzenes	0.40	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	77.70	4.060	4.009	2.606	2.605	2.606	2.606	0.503	0.503
Phenanthrene	6.08	0.022	0.014	0.022	0.022	0.019	0.019	0.018	0.018
Phenol	2.67	0.641	0.640	0.407	0.406	0.287	0.287	0.081	0.081
Polychlorinated biphenyls	1.20	0.004	0.002	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	4.29	0.017	0.011	0.017	0.017	0.013	0.013	0.013	0.013
Toluene	7.43	1.068	1.065	0.775	0.775	0.715	0.715	0.022	0.022
Total mercury (methyl mercury for air emissions)	13.12	0.049	0.030	0.043	0.042	0.043	0.043	0.041	0.041
Trichlorobenzenes	20.70	0.222	0.204	0.195	0.195	0.147	0.147	0.085	0.085
Xylene isomers (total)	45.47	3.455	3.429	3.422	3.421	3.422	3.422	0.155	0.155

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				19	3		
Benzene	1.80	100		3.4E-02	4.6E-03	3.4E-02	4.6E-03
Benzo[a]pyrene	1.14	1,096,478		2.2E-02	2.9E-03	2.1E-02	2.9E-03
Chlorobenzene	14.29	500		2.7E-01	3.6E-02	2.7E-01	3.6E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	2,399		5.8E-02	7.8E-03	5.8E-02	7.8E-03
Ethylbenzene	1.03	588		1.9E-02	2.6E-03	1.9E-02	2.6E-03
Fluorene	1.57	15,136		3.0E-02	4.0E-03	3.0E-02	4.0E-03
Hexachlorobenzenes	0.02	1,513,561		2.9E-04	3.8E-05	2.7E-04	3.8E-05
Naphthalene	88.57	2,344		1.7E+00	2.3E-01	1.7E+00	2.3E-01
Phenanthrene	5.33	342,748		1.0E-01	1.4E-02	9.8E-02	1.4E-02
Phenol	0.41	100		7.8E-03	1.0E-03	7.8E-03	1.0E-03
Polychlorinated biphenyls	1.33	1,380,384		2.5E-02	3.4E-03	2.4E-02	3.4E-03
Pyrene	2.69	208,930		5.1E-02	6.8E-03	5.0E-02	6.8E-03
Toluene	1.76	490		3.3E-02	4.5E-03	3.3E-02	4.5E-03
Total mercury (methyl mercury for air emissions)	2.03	464,067	6,961	3.8E-02	5.2E-03	3.7E-02	5.1E-03
Trichlorobenzenes	0.37	18,197		7.0E-03	9.4E-04	7.0E-03	9.4E-04
Xylene isomers (total)	11.55	1,413		2.2E-01	2.9E-02	2.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	1.4E+01	1.4E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E+00	3.0E+00
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	1.6E+00	1.6E+00
Hexachlorobenzenes	1.5E-02	1.5E-02
Naphthalene	8.9E+01	8.9E+01
Phenanthrene	5.3E+00	5.3E+00
Phenol	4.1E-01	4.1E-01
Polychlorinated biphenyls	1.3E+00	1.3E+00
Pyrene	2.7E+00	2.7E+00
Toluene	1.8E+00	1.8E+00
Total mercury (methyl mercury for air emissions)	2.0E+00	2.0E+00
Trichlorobenzenes	3.7E-01	3.7E-01
Xylene isomers (total)	1.2E+01	1.2E+01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

		Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
Analyte	Average concentration of dredged material in mg/kg	Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.80	1.8E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02
Benzo[a]pyrene	1.14	1.1E+02	1.9E-01	1.9E-01	5.2E-01	1.6E-01	1.5E-01
Chlorobenzene	14.29	1.4E+03	8.5E+02	8.4E+02	8.2E+02	8.5E+02	8.4E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	3.0E+02	6.9E+01	6.9E+01	6.7E+01	6.9E+01	6.9E+01
Ethylbenzene	1.03	1.0E+02	5.7E+01	5.6E+01	5.5E+01	5.7E+01	5.6E+01
Fluorene	1.57	1.6E+02	7.0E+00	7.0E+00	7.2E+00	6.9E+00	6.8E+00
Hexachlorobenzenes	0.02	1.5E+00	2.2E-03	2.2E-03	6.7E-03	1.8E-03	1.8E-03
Naphthalene	88.57	8.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03
Phenanthrene	5.33	5.3E+02	1.6E+00	1.6E+00	3.2E+00	1.4E+00	1.4E+00
Phenol	0.41	4.1E+01	3.7E+01	3.7E+01	3.6E+01	3.7E+01	3.7E+01
Polychlorinated biphenyls	1.33	1.3E+02	2.0E-01	2.0E-01	5.9E-01	1.7E-01	1.7E-01
Pyrene	2.69	2.7E+02	1.2E+00	1.2E+00	1.9E+00	1.0E+00	1.0E+00
Toluene	1.76	1.8E+02	1.1E+02	1.0E+02	1.0E+02	1.1E+02	1.0E+02
Total mercury (methyl mercury for air emissions)	2.03	2.0E+02	5.1E-01	5.1E-01	1.1E+00	4.3E-01	4.3E-01
Trichlorobenzenes	0.37	3.7E+01	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Xylene isomers (total)	11.55	1.2E+03	3.9E+02	3.8E+02	3.7E+02	3.8E+02	3.8E+02

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		214		7		5		5	
Benzene	1.80	0.347	0.347	0.268	0.268	0.268	0.268	0.006	0.006
Benzo[a]pyrene	1.14	0.003	0.002	0.003	0.003	0.003	0.000	0.003	0.000
Chlorobenzene	14.29	1.824	1.821	1.824	1.823	1.824	1.824	0.039	0.039
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	0.154	0.153	0.093	0.093	0.088	0.088	0.008	0.008
Ethylbenzene	1.03	0.122	0.122	0.022	0.022	0.021	0.021	0.008	0.008
Fluorene	1.57	0.019	0.018	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	88.57	4.524	4.491	2.890	2.890	2.890	2.890	0.527	0.527
Phenanthrene	5.33	0.017	0.012	0.017	0.017	0.014	0.014	0.014	0.014
Phenol	0.41	0.080	0.080	0.051	0.051	0.036	0.036	0.010	0.010
Polychlorinated biphenyls	1.33	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	2.69	0.009	0.007	0.009	0.009	0.007	0.007	0.007	0.007
Toluene	1.76	0.226	0.226	0.164	0.164	0.151	0.151	0.004	0.004
Total mercury (methyl mercury for air emissions)	2.03	0.006	0.004	0.006	0.006	0.006	0.006	0.005	0.005
Trichlorobenzenes	0.37	0.004	0.004	0.003	0.003	0.003	0.003	0.001	0.001
Xylene isomers (total)	11.55	0.840	0.836	0.832	0.831	0.832	0.832	0.034	0.034

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.1E-03	3.9E-02	5.1E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.6E-05	5.9E-04	7.6E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.1E-06	6.8E-05	9.1E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.3E-04	4.9E-03	6.3E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	8.0E-04	6.0E-03	8.0E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.5E-04	6.6E-03	8.5E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7): 3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F1
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10.8
Total dredge volume in cy: 75,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 500

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 28%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		207		7		5		5	
Benzene	1.77	0.343	0.343	0.265	0.265	0.265	0.265	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.016	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.043	0.043	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.027	0.027	0.026	0.026	0.026	0.026	0.001	0.001

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				55	5		
Benzene	0.01	100		3.1E-04	2.8E-05	3.1E-04	2.8E-05
Benzo[a]pyrene	0.08	1,096,478		4.4E-03	4.0E-04	4.0E-03	3.9E-04
Chlorobenzene	0.01	500		3.5E-04	3.2E-05	3.5E-04	3.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2,399		1.5E-03	1.4E-04	1.5E-03	1.4E-04
Ethylbenzene	0.01	588		6.6E-04	5.9E-05	6.6E-04	5.9E-05
Fluorene	0.03	15,136		1.8E-03	1.6E-04	1.7E-03	1.6E-04
Hexachlorobenzenes	0.11	1,513,561		6.0E-03	5.4E-04	5.4E-03	5.4E-04
Naphthalene	0.07	2,344		4.1E-03	3.7E-04	4.1E-03	3.7E-04
Phenanthrene	0.08	342,748		4.6E-03	4.1E-04	4.2E-03	4.1E-04
Phenol	0.08	100		4.5E-03	4.1E-04	4.5E-03	4.1E-04
Polychlorinated biphenyls	0.37	1,380,384		2.0E-02	1.8E-03	1.8E-02	1.8E-03
Pyrene	0.19	208,930		1.0E-02	9.3E-04	9.5E-03	9.2E-04
Toluene	0.00	490		2.7E-04	2.4E-05	2.7E-04	2.4E-05
Total mercury (methyl mercury for air emissions)	7.46	497,214	6,961	4.1E-01	3.7E-02	3.8E-01	3.7E-02
Trichlorobenzenes	0.02	18,197		9.4E-04	8.5E-05	9.2E-04	8.5E-05
Xylene isomers (total)	0.09	1,413		4.9E-03	4.4E-04	4.9E-03	4.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.5E-03	5.5E-03
Benzo[a]pyrene	8.0E-02	8.0E-02
Chlorobenzene	6.3E-03	6.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.7E-02	2.7E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	7.5E-02	7.5E-02
Phenanthrene	8.3E-02	8.3E-02
Phenol	8.1E-02	8.1E-02
Polychlorinated biphenyls	3.7E-01	3.7E-01
Pyrene	1.9E-01	1.9E-01
Toluene	4.9E-03	4.9E-03
Total mercury (methyl mercury for air emissions)	7.5E+00	7.5E+00
Trichlorobenzenes	1.7E-02	1.7E-02
Xylene isomers (total)	8.9E-02	8.9E-02

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.01	5.5E-01	5.1E-01	5.0E-01	4.9E-01	5.1E-01	5.0E-01
Benzo[a]pyrene	0.08	8.0E+00	1.9E-02	1.9E-02	3.9E-02	1.6E-02	1.6E-02
Chlorobenzene	0.01	6.3E-01	3.9E-01	3.8E-01	3.7E-01	3.9E-01	3.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2.7E+00	6.5E-01	6.5E-01	6.3E-01	6.5E-01	6.5E-01
Ethylbenzene	0.01	1.2E+00	6.8E-01	6.7E-01	6.5E-01	6.8E-01	6.7E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.4E-02	2.3E-02	5.1E-02	2.0E-02	1.9E-02
Naphthalene	0.07	7.5E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Phenanthrene	0.08	8.3E+00	3.2E-02	3.1E-02	5.2E-02	2.8E-02	2.7E-02
Phenol	0.08	8.1E+00	7.4E+00	7.4E+00	7.1E+00	7.4E+00	7.4E+00
Polychlorinated biphenyls	0.37	3.7E+01	8.3E-02	8.3E-02	1.8E-01	6.9E-02	6.9E-02
Pyrene	0.19	1.9E+01	9.7E-02	9.6E-02	1.4E-01	8.6E-02	8.5E-02
Toluene	0.00	4.9E-01	3.0E-01	3.0E-01	2.9E-01	3.0E-01	3.0E-01
Total mercury (methyl mercury for air emissions)	7.46	7.5E+02	2.4E+00	2.4E+00	4.2E+00	2.0E+00	2.0E+00
Trichlorobenzenes	0.02	1.7E+00	6.9E-02	6.8E-02	7.1E-02	6.8E-02	6.7E-02
Xylene isomers (total)	0.09	8.9E+00	3.1E+00	3.1E+00	3.0E+00	3.1E+00	3.0E+00

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		337		12		8		8	
Benzene	0.01	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.01	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	0.07	0.006	0.006	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.08	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.08	0.025	0.025	0.016	0.016	0.011	0.011	0.003	0.003
Polychlorinated biphenyls	0.37	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Pyrene	0.19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	7.46	0.045	0.028	0.040	0.040	0.040	0.040	0.039	0.039
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.09	0.011	0.011	0.011	0.011	0.011	0.011	0.000	0.000

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				31	3		
Benzene	0.00	100		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	2.8E-04	3.1E-03	2.8E-04
Chlorobenzene	0.00	500		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	1.0E-04	1.2E-03	1.0E-04
Ethylbenzene	0.00	588		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Fluorene	0.05	15,136		1.7E-03	1.4E-04	1.6E-03	1.4E-04
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	2.0E-05	2.2E-04	2.0E-05
Naphthalene	0.14	2,344		4.2E-03	3.7E-04	4.2E-03	3.7E-04
Phenanthrene	0.14	342,748		4.4E-03	3.8E-04	4.2E-03	3.8E-04
Phenol	0.02	100		5.3E-04	4.6E-05	5.3E-04	4.6E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	6.7E-04	7.3E-03	6.6E-04
Pyrene	0.21	208,930		6.5E-03	5.6E-04	6.3E-03	5.6E-04
Toluene	0.02	490		6.5E-04	5.6E-05	6.5E-04	5.6E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	2.0E-03	2.2E-02	2.0E-03
Trichlorobenzenes	0.02	18,197		6.9E-04	6.0E-05	6.9E-04	6.0E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	1.0E-05	1.2E-04	1.0E-05

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.6E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.6E-01	2.6E-01	2.7E-01	2.6E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.5E-01	2.4E-01	2.5E-01	2.5E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.2E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.1E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.7E-01	1.3E-01	2.5E-01	2.5E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	3.8E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.1E-01
Toluene	0.02	2.1E+00	1.5E+00	1.5E+00	1.4E+00	1.5E+00	1.5E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.2E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

Attachment D - Predicted Quality Impacts Associated with Dredging

Alternative F1, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		167		6		4		4	
Benzene	0.00	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.008	0.007	0.005	0.005	0.005	0.005	0.001	0.001
Phenanthrene	0.14	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.02	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.02	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: **Koc (mL/g)***	Partitioning Coefficients: **Kd (mL/g)**	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				39	3		
Benzene	0.13	100		5.0E-03	3.7E-04	5.0E-03	3.7E-04
Benzo[a]pyrene	1.75	1,096,478		6.8E-02	5.1E-03	6.2E-02	5.0E-03
Chlorobenzene	0.49	500		1.9E-02	1.4E-03	1.9E-02	1.4E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	2,399		2.5E-02	1.8E-03	2.5E-02	1.8E-03
Ethylbenzene	0.22	588		8.4E-03	6.2E-04	8.4E-03	6.2E-04
Fluorene	1.35	15,136		5.3E-02	3.9E-03	5.3E-02	3.9E-03
Hexachlorobenzenes	0.03	1,513,561		1.3E-03	9.6E-05	1.2E-03	9.5E-05
Naphthalene	2.93	2,344		1.2E-01	8.5E-03	1.1E-01	8.5E-03
Phenanthrene	5.18	342,748		2.0E-01	1.5E-02	1.9E-01	1.5E-02
Phenol	0.06	100		2.2E-03	1.6E-04	2.2E-03	1.6E-04
Polychlorinated biphenyls	1.19	1,380,384		4.7E-02	3.4E-03	4.2E-02	3.4E-03
Pyrene	3.63	208,930		1.4E-01	1.1E-02	1.3E-01	1.0E-02
Toluene	0.11	490		4.1E-03	3.1E-04	4.1E-03	3.1E-04
Total mercury (methyl mercury for air emissions)	2.86	366,368	6,961	1.1E-01	8.3E-03	1.0E-01	8.3E-03
Trichlorobenzenes	0.53	18,197		2.1E-02	1.5E-03	2.1E-02	1.5E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	9.4E-04	1.3E-02	9.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.3E-01	1.3E-01
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	4.9E-01	4.9E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.3E-01	6.3E-01
Ethylbenzene	2.2E-01	2.2E-01
Fluorene	1.4E+00	1.4E+00
Hexachlorobenzenes	3.3E-02	3.3E-02
Naphthalene	2.9E+00	2.9E+00
Phenanthrene	5.2E+00	5.2E+00
Phenol	5.5E-02	5.5E-02
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	3.6E+00	3.6E+00
Toluene	1.1E-01	1.1E-01
Total mercury (methyl mercury for air emissions)	2.9E+00	2.9E+00
Trichlorobenzenes	5.3E-01	5.3E-01
Xylene isomers (total)	3.2E-01	3.2E-01

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.13	1.3E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01
Benzo[a]pyrene	1.75	1.7E+02	5.2E-01	5.2E-01	6.3E-01	4.1E-01	4.1E-01
Chlorobenzene	0.49	4.9E+01	2.6E+01	2.6E+01	2.5E+01	2.6E+01	2.6E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	6.3E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01
Ethylbenzene	0.22	2.2E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Fluorene	1.35	1.4E+02	5.0E+00	5.0E+00	4.9E+00	4.9E+00	4.8E+00
Hexachlorobenzenes	0.03	3.3E+00	9.4E-03	9.3E-03	1.2E-02	7.3E-03	7.2E-03
Naphthalene	2.93	2.9E+02	5.6E+01	5.6E+01	5.4E+01	5.6E+01	5.5E+01
Phenanthrene	5.18	5.2E+02	2.1E+00	2.1E+00	2.4E+00	1.7E+00	1.7E+00
Phenol	0.06	5.5E+00	4.8E+00	4.8E+00	4.6E+00	4.8E+00	4.8E+00
Polychlorinated biphenyls	1.19	1.2E+02	3.4E-01	3.4E-01	4.2E-01	2.7E-01	2.7E-01
Pyrene	3.63	3.6E+02	1.8E+00	1.8E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.11	1.1E+01	5.7E+00	5.6E+00	5.5E+00	5.7E+00	5.6E+00
Total mercury (methyl mercury for air emissions)	2.86	2.9E+02	1.1E+00	1.1E+00	1.3E+00	9.4E-01	9.4E-01
Trichlorobenzenes	0.53	5.3E+01	1.7E+00	1.7E+00	1.7E+00	1.6E+00	1.6E+00
Xylene isomers (total)	0.32	3.2E+01	9.2E+00	9.0E+00	8.8E+00	9.2E+00	9.0E+00

SMU (Insert Value: 1 through 7): 6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F1
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 33
Total dredge volume in cy: 245,000
Dredge cut in feet (either average or to max conc): 4.6
Post-dredge water depth (either average or to max conc.) in feet: 8.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 1,633

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 40%
Specific gravity: 2.6
TOC: 1.9%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 112 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 453,248

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		208		7		5		5	
Benzene	0.13	0.023	0.023	0.018	0.018	0.018	0.018	0.000	0.000
Benzo[a]pyrene	1.75	0.006	0.004	0.006	0.006	0.006	0.000	0.006	0.000
Chlorobenzene	0.49	0.054	0.054	0.054	0.054	0.054	0.054	0.001	0.001
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	0.026	0.026	0.016	0.016	0.015	0.015	0.002	0.002
Ethylbenzene	0.22	0.022	0.022	0.004	0.004	0.004	0.004	0.002	0.002
Fluorene	1.35	0.014	0.013	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.93	0.123	0.122	0.079	0.079	0.079	0.079	0.017	0.017
Phenanthrene	5.18	0.019	0.013	0.019	0.019	0.016	0.016	0.015	0.015
Phenol	0.06	0.010	0.010	0.006	0.006	0.005	0.005	0.001	0.001
Polychlorinated biphenyls	1.19	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	3.63	0.014	0.010	0.014	0.014	0.011	0.011	0.011	0.011
Toluene	0.11	0.012	0.012	0.009	0.009	0.008	0.008	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.86	0.011	0.007	0.009	0.009	0.009	0.009	0.009	0.009
Trichlorobenzenes	0.53	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002
Xylene isomers (total)	0.32	0.020	0.019	0.019	0.019	0.019	0.019	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F1, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				38	4		
Benzene	1.21	100		4.6E-02	5.4E-03	4.6E-02	5.4E-03
Benzo[a]pyrene	1.75	1,096,478		6.7E-02	7.8E-03	6.1E-02	7.7E-03
Chlorobenzene	12.91	500		4.9E-01	5.7E-02	4.9E-01	5.7E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	2,399		2.1E+00	2.5E-01	2.1E+00	2.5E-01
Ethylbenzene	1.01	588		3.9E-02	4.5E-03	3.9E-02	4.5E-03
Fluorene	6.30	15,136		2.4E-01	2.8E-02	2.4E-01	2.8E-02
Hexachlorobenzenes	0.97	1,513,561		3.7E-02	4.3E-03	3.4E-02	4.2E-03
Naphthalene	26.93	2,344		1.0E+00	1.2E-01	1.0E+00	1.2E-01
Phenanthrene	6.03	342,748		2.3E-01	2.7E-02	2.1E-01	2.7E-02
Phenol	0.09	100		3.6E-03	4.2E-04	3.6E-03	4.2E-04
Polychlorinated biphenyls	1.67	1,380,384		6.4E-02	7.4E-03	5.8E-02	7.3E-03
Pyrene	3.98	208,930		1.5E-01	1.8E-02	1.4E-01	1.8E-02
Toluene	2.57	490		9.8E-02	1.1E-02	9.8E-02	1.1E-02
Total mercury (methyl mercury for air emissions)	20.54	409,471	6,961	7.9E-01	9.1E-02	7.3E-01	9.0E-02
Trichlorobenzenes	9.26	18,197		3.5E-01	4.1E-02	3.5E-01	4.1E-02
Xylene isomers (total)	9.94	1,413		3.8E-01	4.4E-02	3.8E-01	4.4E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	5.6E+01	5.6E+01
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	6.3E+00	6.3E+00
Hexachlorobenzenes	9.7E-01	9.7E-01
Naphthalene	2.7E+01	2.7E+01
Phenanthrene	6.0E+00	6.0E+00
Phenol	9.5E-02	9.5E-02
Polychlorinated biphenyls	1.7E+00	1.7E+00
Pyrene	4.0E+00	4.0E+00
Toluene	2.6E+00	2.6E+00
Total mercury (methyl mercury for air emissions)	2.1E+01	2.1E+01
Trichlorobenzenes	9.3E+00	9.3E+00
Xylene isomers (total)	9.9E+00	9.9E+00

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F1
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	112	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	453,248	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.21	1.2E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	1.75	1.7E+02	4.5E-01	4.5E-01	7.1E-01	3.6E-01	3.6E-01
Chlorobenzene	12.91	1.3E+03	7.3E+02	7.2E+02	7.0E+02	7.3E+02	7.2E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	5.6E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	1.01	1.0E+02	5.3E+01	5.2E+01	5.1E+01	5.3E+01	5.2E+01
Fluorene	6.30	6.3E+02	2.6E+01	2.6E+01	2.6E+01	2.5E+01	2.5E+01
Hexachlorobenzenes	0.97	9.7E+01	2.4E-01	2.3E-01	3.8E-01	1.9E-01	1.9E-01
Naphthalene	26.93	2.7E+03	5.7E+02	5.6E+02	5.5E+02	5.6E+02	5.6E+02
Phenanthrene	6.03	6.0E+02	2.3E+00	2.3E+00	3.1E+00	1.9E+00	1.9E+00
Phenol	0.09	9.5E+00	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Polychlorinated biphenyls	1.67	1.7E+02	4.1E-01	4.1E-01	6.6E-01	3.3E-01	3.3E-01
Pyrene	3.98	4.0E+02	2.0E+00	2.0E+00	2.5E+00	1.7E+00	1.7E+00
Toluene	2.57	2.6E+02	1.5E+02	1.4E+02	1.4E+02	1.5E+02	1.4E+02
Total mercury (methyl mercury for air emissions)	20.54	2.1E+03	7.2E+00	7.2E+00	1.0E+01	6.0E+00	6.0E+00
Trichlorobenzenes	9.26	9.3E+02	3.2E+01	3.2E+01	3.2E+01	3.1E+01	3.1E+01
Xylene isomers (total)	9.94	9.9E+02	3.1E+02	3.0E+02	2.9E+02	3.1E+02	3.0E+02

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F1
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 13.4
Total dredge volume in cy: 89,000
Dredge cut in feet (either average or to max conc): 4.1
Post-dredge water depth (either average or to max conc.) in feet: 7.3

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 593

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 112 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 453,248

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		378		12		8		8	
Benzene	1.21	0.405	0.405	0.313	0.313	0.313	0.313	0.007	0.007
Benzo[a]pyrene	1.75	0.009	0.005	0.009	0.009	0.009	0.000	0.009	0.000
Chlorobenzene	12.91	2.766	2.757	2.766	2.766	2.766	2.766	0.061	0.061
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	4.564	4.495	2.765	2.764	2.622	2.622	0.264	0.264
Ethylbenzene	1.01	0.201	0.200	0.036	0.036	0.034	0.034	0.013	0.013
Fluorene	6.30	0.124	0.114	0.029	0.029	0.029	0.029	0.028	0.028
Hexachlorobenzenes	0.97	0.005	0.003	0.005	0.005	0.005	0.005	0.005	0.005
Naphthalene	26.93	2.228	2.195	1.426	1.426	1.426	1.426	0.267	0.267
Phenanthrene	6.03	0.035	0.020	0.035	0.034	0.028	0.028	0.027	0.027
Phenol	0.09	0.032	0.032	0.020	0.020	0.014	0.014	0.004	0.004
Polychlorinated biphenyls	1.67	0.009	0.005	0.009	0.008	0.009	0.009	0.009	0.009
Pyrene	3.98	0.025	0.016	0.025	0.024	0.018	0.018	0.018	0.018
Toluene	2.57	0.555	0.554	0.403	0.403	0.372	0.372	0.011	0.011
Total mercury (methyl mercury for air emissions)	20.54	0.117	0.067	0.102	0.099	0.100	0.100	0.096	0.096
Trichlorobenzenes	9.26	0.160	0.145	0.140	0.139	0.104	0.104	0.058	0.058
Xylene isomers (total)	9.94	1.181	1.170	1.169	1.169	1.169	1.169	0.050	0.050

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	63
Total dredge volume in cy:	1,015,000
Dredge cut in feet (either average or to max conc):	10
Post-dredge water depth (either average or to max conc.) in feet:	14.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	6,767
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				18	1		
Benzene	5.03	100		9.1E-02	4.9E-03	9.1E-02	4.9E-03
Benzo[a]pyrene	1.09	1,096,478		2.0E-02	1.1E-03	1.9E-02	1.1E-03
Chlorobenzene	19.94	500		3.6E-01	1.9E-02	3.6E-01	1.9E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	39.04	2,399		7.1E-01	3.8E-02	7.1E-01	3.8E-02
Ethylbenzene	5.10	588		9.2E-02	4.9E-03	9.2E-02	4.9E-03
Fluorene	5.11	15,136		9.3E-02	5.0E-03	9.2E-02	5.0E-03
Hexachlorobenzenes	0.27	1,513,561		5.0E-03	2.7E-04	4.7E-03	2.7E-04
Naphthalene	137.19	2,344		2.5E+00	1.3E-01	2.5E+00	1.3E-01
Phenanthrene	7.99	342,748		1.4E-01	7.7E-03	1.4E-01	7.7E-03
Phenol	3.24	100		5.9E-02	3.1E-03	5.9E-02	3.1E-03
Polychlorinated biphenyls	1.01	1,380,384		1.8E-02	9.7E-04	1.7E-02	9.7E-04
Pyrene	3.60	208,930		6.5E-02	3.5E-03	6.3E-02	3.5E-03
Toluene	11.96	490		2.2E-01	1.2E-02	2.2E-01	1.2E-02
Total mercury (methyl mercury for air emissions)	16.06	348,050	6,961	2.9E-01	1.6E-02	2.8E-01	1.6E-02
Trichlorobenzenes	11.33	18,197		2.1E-01	1.1E-02	2.0E-01	1.1E-02
Xylene isomers (total)	77.07	1,413		1.4E+00	7.5E-02	1.4E+00	7.5E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	63
Total dredge volume in cy:	1,015,000
Dredge cut in feet (either average or to max conc):	10
Post-dredge water depth (either average or to max conc.) in feet:	14.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	6,767
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.0E+00	5.0E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	2.0E+01	2.0E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.9E+01	3.9E+01
Ethylbenzene	5.1E+00	5.1E+00
Fluorene	5.1E+00	5.1E+00
Hexachlorobenzenes	2.7E-01	2.7E-01
Naphthalene	1.4E+02	1.4E+02
Phenanthrene	8.0E+00	8.0E+00
Phenol	3.2E+00	3.2E+00
Polychlorinated biphenyls	1.0E+00	1.0E+00
Pyrene	3.6E+00	3.6E+00
Toluene	1.2E+01	1.2E+01
Total mercury (methyl mercury for air emissions)	1.6E+01	1.6E+01
Trichlorobenzenes	1.1E+01	1.1E+01
Xylene isomers (total)	7.7E+01	7.7E+01

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	63
Total dredge volume in cy:	1,015,000
Dredge cut in feet (either average or to max conc):	10
Post-dredge water depth (either average or to max conc.) in feet:	14.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	6,767
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	5.03	5.0E+02	4.4E+02	4.3E+02	4.2E+02	4.4E+02	4.3E+02
Benzo[a]pyrene	1.09	1.1E+02	1.7E-01	1.7E-01	3.8E-01	1.3E-01	1.3E-01
Chlorobenzene	19.94	2.0E+03	1.0E+03	1.0E+03	1.0E+03	1.0E+03	1.0E+03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	39.04	3.9E+03	7.0E+02	7.0E+02	6.8E+02	7.0E+02	6.9E+02
Ethylbenzene	5.10	5.1E+02	2.4E+02	2.4E+02	2.3E+02	2.4E+02	2.4E+02
Fluorene	5.11	5.1E+02	1.8E+01	1.7E+01	1.8E+01	1.7E+01	1.7E+01
Hexachlorobenzenes	0.27	2.7E+01	3.9E-02	3.8E-02	9.1E-02	3.0E-02	2.9E-02
Naphthalene	137.19	1.4E+04	2.5E+03	2.5E+03	2.4E+03	2.5E+03	2.5E+03
Phenanthrene	7.99	8.0E+02	2.1E+00	2.0E+00	3.5E+00	1.7E+00	1.6E+00
Phenol	3.24	3.2E+02	2.8E+02	2.8E+02	2.7E+02	2.8E+02	2.8E+02
Polychlorinated biphenyls	1.01	1.0E+02	1.5E-01	1.5E-01	3.4E-01	1.1E-01	1.1E-01
Pyrene	3.60	3.6E+02	1.3E+00	1.3E+00	1.9E+00	1.1E+00	1.1E+00
Toluene	11.96	1.2E+03	6.3E+02	6.2E+02	6.1E+02	6.3E+02	6.1E+02
Total mercury (methyl mercury for air emissions)	16.06	1.6E+03	4.1E+00	4.1E+00	7.1E+00	3.4E+00	3.4E+00
Trichlorobenzenes	11.33	1.1E+03	3.3E+01	3.2E+01	3.3E+01	3.2E+01	3.1E+01
Xylene isomers (total)	77.07	7.7E+03	2.1E+03	2.1E+03	2.0E+03	2.1E+03	2.0E+03

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	63
Total dredge volume in cy:	1,015,000
Dredge cut in feet (either average or to max conc):	10
Post-dredge water depth (either average or to max conc.) in feet:	14.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	6,767
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		88		3		2		2	
Benzene	5.03	0.379	0.379	0.293	0.293	0.293	0.293	0.007	0.007
Benzo[a]pyrene	1.09	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	19.94	0.911	0.910	0.911	0.911	0.911	0.911	0.021	0.021
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	39.04	0.649	0.647	0.395	0.395	0.374	0.374	0.040	0.040
Ethylbenzene	5.10	0.214	0.214	0.038	0.038	0.036	0.036	0.014	0.014
Fluorene	5.11	0.020	0.020	0.005	0.005	0.005	0.005	0.005	0.005
Hexachlorobenzenes	0.27	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	137.19	2.299	2.290	1.476	1.476	1.476	1.476	0.285	0.285
Phenanthrene	7.99	0.009	0.008	0.009	0.009	0.008	0.008	0.008	0.008
Phenol	3.24	0.250	0.250	0.158	0.158	0.112	0.112	0.031	0.031
Polychlorinated biphenyls	1.01	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	3.60	0.005	0.004	0.005	0.005	0.003	0.003	0.003	0.003
Toluene	11.96	0.551	0.551	0.400	0.400	0.369	0.369	0.012	0.012
Total mercury (methyl mercury for air emissions)	16.06	0.019	0.016	0.017	0.017	0.017	0.017	0.016	0.016
Trichlorobenzenes	11.33	0.039	0.038	0.034	0.034	0.026	0.026	0.015	0.015
Xylene isomers (total)	77.07	1.878	1.873	1.860	1.859	1.860	1.860	0.084	0.084

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10
Total dredge volume in cy: 169,000
Dredge cut in feet (either average or to max conc): 10.7
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 1,127

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 98%
Specific gravity: 2.52
TOC: 1.5%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 172 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 696,059

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				19	3		
Benzene	1.80	100		3.4E-02	4.6E-03	3.4E-02	4.6E-03
Benzo[a]pyrene	1.14	1,096,478		2.2E-02	2.9E-03	2.1E-02	2.9E-03
Chlorobenzene	14.29	500		2.7E-01	3.6E-02	2.7E-01	3.6E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	2,399		5.8E-02	7.8E-03	5.8E-02	7.8E-03
Ethylbenzene	1.03	588		1.9E-02	2.6E-03	1.9E-02	2.6E-03
Fluorene	1.57	15,136		3.0E-02	4.0E-03	3.0E-02	4.0E-03
Hexachlorobenzenes	0.02	1,513,561		2.9E-04	3.8E-05	2.7E-04	3.8E-05
Naphthalene	88.57	2,344		1.7E+00	2.3E-01	1.7E+00	2.3E-01
Phenanthrene	5.33	342,748		1.0E-01	1.4E-02	9.8E-02	1.4E-02
Phenol	0.41	100		7.8E-03	1.0E-03	7.8E-03	1.0E-03
Polychlorinated biphenyls	1.33	1,380,384		2.5E-02	3.4E-03	2.4E-02	3.4E-03
Pyrene	2.69	208,930		5.1E-02	6.8E-03	5.0E-02	6.8E-03
Toluene	1.76	490		3.3E-02	4.5E-03	3.3E-02	4.5E-03
Total mercury (methyl mercury for air emissions)	2.03	464,067	6,961	3.8E-02	5.2E-03	3.7E-02	5.1E-03
Trichlorobenzenes	0.37	18,197		7.0E-03	9.4E-04	7.0E-03	9.4E-04
Xylene isomers (total)	11.55	1,413		2.2E-01	2.9E-02	2.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	1.4E+01	1.4E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E+00	3.0E+00
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	1.6E+00	1.6E+00
Hexachlorobenzenes	1.5E-02	1.5E-02
Naphthalene	8.9E+01	8.9E+01
Phenanthrene	5.3E+00	5.3E+00
Phenol	4.1E-01	4.1E-01
Polychlorinated biphenyls	1.3E+00	1.3E+00
Pyrene	2.7E+00	2.7E+00
Toluene	1.8E+00	1.8E+00
Total mercury (methyl mercury for air emissions)	2.0E+00	2.0E+00
Trichlorobenzenes	3.7E-01	3.7E-01
Xylene isomers (total)	1.2E+01	1.2E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.80	1.8E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02
Benzo[a]pyrene	1.14	1.1E+02	1.9E-01	1.9E-01	5.2E-01	1.6E-01	1.5E-01
Chlorobenzene	14.29	1.4E+03	8.5E+02	8.4E+02	8.2E+02	8.5E+02	8.4E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	3.0E+02	6.9E+01	6.9E+01	6.7E+01	6.9E+01	6.9E+01
Ethylbenzene	1.03	1.0E+02	5.7E+01	5.6E+01	5.5E+01	5.7E+01	5.6E+01
Fluorene	1.57	1.6E+02	7.0E+00	7.0E+00	7.2E+00	6.9E+00	6.8E+00
Hexachlorobenzenes	0.02	1.5E+00	2.2E-03	2.2E-03	6.7E-03	1.8E-03	1.8E-03
Naphthalene	88.57	8.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03
Phenanthrene	5.33	5.3E+02	1.6E+00	1.6E+00	3.2E+00	1.4E+00	1.4E+00
Phenol	0.41	4.1E+01	3.7E+01	3.7E+01	3.6E+01	3.7E+01	3.7E+01
Polychlorinated biphenyls	1.33	1.3E+02	2.0E-01	2.0E-01	5.9E-01	1.7E-01	1.7E-01
Pyrene	2.69	2.7E+02	1.2E+00	1.2E+00	1.9E+00	1.0E+00	1.0E+00
Toluene	1.76	1.8E+02	1.1E+02	1.0E+02	1.0E+02	1.1E+02	1.0E+02
Total mercury (methyl mercury for air emissions)	2.03	2.0E+02	5.1E-01	5.1E-01	1.1E+00	4.3E-01	4.3E-01
Trichlorobenzenes	0.37	3.7E+01	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Xylene isomers (total)	11.55	1.2E+03	3.9E+02	3.8E+02	3.7E+02	3.8E+02	3.8E+02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10
Total dredge volume in cy: 169,000
Dredge cut in feet (either average or to max conc): 10.7
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 1,127

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 98%
Specific gravity: 2.52
TOC: 1.5%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 172 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 696,059

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		214		7		5		5	
Benzene	1.80	0.347	0.347	0.268	0.268	0.268	0.268	0.006	0.006
Benzo[a]pyrene	1.14	0.003	0.002	0.003	0.003	0.003	0.000	0.003	0.000
Chlorobenzene	14.29	1.824	1.821	1.824	1.823	1.824	1.824	0.039	0.039
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	0.154	0.153	0.093	0.093	0.088	0.088	0.008	0.008
Ethylbenzene	1.03	0.122	0.122	0.022	0.022	0.021	0.021	0.008	0.008
Fluorene	1.57	0.019	0.018	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	88.57	4.524	4.491	2.890	2.890	2.890	2.890	0.527	0.527
Phenanthrene	5.33	0.017	0.012	0.017	0.017	0.014	0.014	0.014	0.014
Phenol	0.41	0.080	0.080	0.051	0.051	0.036	0.036	0.010	0.010
Polychlorinated biphenyls	1.33	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	2.69	0.009	0.007	0.009	0.009	0.007	0.007	0.007	0.007
Toluene	1.76	0.226	0.226	0.164	0.164	0.151	0.151	0.004	0.004
Total mercury (methyl mercury for air emissions)	2.03	0.006	0.004	0.006	0.006	0.006	0.006	0.005	0.005
Trichlorobenzenes	0.37	0.004	0.004	0.003	0.003	0.003	0.003	0.001	0.001
Xylene isomers (total)	11.55	0.840	0.836	0.832	0.831	0.832	0.832	0.034	0.034

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.1E-03	3.9E-02	5.1E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.6E-05	5.9E-04	7.6E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.1E-06	6.8E-05	9.1E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.3E-04	4.9E-03	6.3E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	8.0E-04	6.0E-03	8.0E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.5E-04	6.6E-03	8.5E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		207		7		5		5	
Benzene	1.77	0.343	0.343	0.265	0.265	0.265	0.265	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.016	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.043	0.043	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.027	0.027	0.026	0.026	0.026	0.026	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				55	5		
Benzene	0.01	100		3.1E-04	2.8E-05	3.1E-04	2.8E-05
Benzo[a]pyrene	0.08	1,096,478		4.4E-03	4.0E-04	4.0E-03	3.9E-04
Chlorobenzene	0.01	500		3.5E-04	3.2E-05	3.5E-04	3.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2,399		1.5E-03	1.4E-04	1.5E-03	1.4E-04
Ethylbenzene	0.01	588		6.6E-04	5.9E-05	6.6E-04	5.9E-05
Fluorene	0.03	15,136		1.8E-03	1.6E-04	1.7E-03	1.6E-04
Hexachlorobenzenes	0.11	1,513,561		6.0E-03	5.4E-04	5.4E-03	5.4E-04
Naphthalene	0.07	2,344		4.1E-03	3.7E-04	4.1E-03	3.7E-04
Phenanthrene	0.08	342,748		4.6E-03	4.1E-04	4.2E-03	4.1E-04
Phenol	0.08	100		4.5E-03	4.1E-04	4.5E-03	4.1E-04
Polychlorinated biphenyls	0.37	1,380,384		2.0E-02	1.8E-03	1.8E-02	1.8E-03
Pyrene	0.19	208,930		1.0E-02	9.3E-04	9.5E-03	9.2E-04
Toluene	0.00	490		2.7E-04	2.4E-05	2.7E-04	2.4E-05
Total mercury (methyl mercury for air emissions)	7.46	497,214	6,961	4.1E-01	3.7E-02	3.8E-01	3.7E-02
Trichlorobenzenes	0.02	18,197		9.4E-04	8.5E-05	9.2E-04	8.5E-05
Xylene isomers (total)	0.09	1,413		4.9E-03	4.4E-04	4.9E-03	4.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7): 4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 22
Total dredge volume in cy: 135,000
Dredge cut in feet (either average or to max conc): 3.8
Post-dredge water depth (either average or to max conc.) in feet: 6.4

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 900

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 58%
Specific gravity: 2.6
TOC: 1.4%
In Situ Sediment Density (% solids by weight) 50%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 172 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 696,059

Avg Sed Specific gravity 2.5

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.5E-03	5.5E-03
Benzo[a]pyrene	8.0E-02	8.0E-02
Chlorobenzene	6.3E-03	6.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.7E-02	2.7E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	7.5E-02	7.5E-02
Phenanthrene	8.3E-02	8.3E-02
Phenol	8.1E-02	8.1E-02
Polychlorinated biphenyls	3.7E-01	3.7E-01
Pyrene	1.9E-01	1.9E-01
Toluene	4.9E-03	4.9E-03
Total mercury (methyl mercury for air emissions)	7.5E+00	7.5E+00
Trichlorobenzenes	1.7E-02	1.7E-02
Xylene isomers (total)	8.9E-02	8.9E-02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.01	5.5E-01	5.1E-01	5.0E-01	4.9E-01	5.1E-01	5.0E-01
Benzo[a]pyrene	0.08	8.0E+00	1.9E-02	1.9E-02	3.9E-02	1.6E-02	1.6E-02
Chlorobenzene	0.01	6.3E-01	3.9E-01	3.8E-01	3.7E-01	3.9E-01	3.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2.7E+00	6.5E-01	6.5E-01	6.3E-01	6.5E-01	6.5E-01
Ethylbenzene	0.01	1.2E+00	6.8E-01	6.7E-01	6.5E-01	6.8E-01	6.7E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.4E-02	2.3E-02	5.1E-02	2.0E-02	1.9E-02
Naphthalene	0.07	7.5E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Phenanthrene	0.08	8.3E+00	3.2E-02	3.1E-02	5.2E-02	2.8E-02	2.7E-02
Phenol	0.08	8.1E+00	7.4E+00	7.4E+00	7.1E+00	7.4E+00	7.4E+00
Polychlorinated biphenyls	0.37	3.7E+01	8.3E-02	8.3E-02	1.8E-01	6.9E-02	6.9E-02
Pyrene	0.19	1.9E+01	9.7E-02	9.6E-02	1.4E-01	8.6E-02	8.5E-02
Toluene	0.00	4.9E-01	3.0E-01	3.0E-01	2.9E-01	3.0E-01	3.0E-01
Total mercury (methyl mercury for air emissions)	7.46	7.5E+02	2.4E+00	2.4E+00	4.2E+00	2.0E+00	2.0E+00
Trichlorobenzenes	0.02	1.7E+00	6.9E-02	6.8E-02	7.1E-02	6.8E-02	6.7E-02
Xylene isomers (total)	0.09	8.9E+00	3.1E+00	3.1E+00	3.0E+00	3.1E+00	3.0E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		337		12		8		8	
Benzene	0.01	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.01	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	0.07	0.006	0.006	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.08	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.08	0.025	0.025	0.016	0.016	0.011	0.011	0.003	0.003
Polychlorinated biphenyls	0.37	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Pyrene	0.19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	7.46	0.045	0.028	0.040	0.040	0.040	0.040	0.039	0.039
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.09	0.011	0.011	0.011	0.011	0.011	0.011	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				31	3		
Benzene	0.00	100		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	2.8E-04	3.1E-03	2.8E-04
Chlorobenzene	0.00	500		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	1.0E-04	1.2E-03	1.0E-04
Ethylbenzene	0.00	588		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Fluorene	0.05	15,136		1.7E-03	1.4E-04	1.6E-03	1.4E-04
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	2.0E-05	2.2E-04	2.0E-05
Naphthalene	0.14	2,344		4.2E-03	3.7E-04	4.2E-03	3.7E-04
Phenanthrene	0.14	342,748		4.4E-03	3.8E-04	4.2E-03	3.8E-04
Phenol	0.02	100		5.3E-04	4.6E-05	5.3E-04	4.6E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	6.7E-04	7.3E-03	6.6E-04
Pyrene	0.21	208,930		6.5E-03	5.6E-04	6.3E-03	5.6E-04
Toluene	0.02	490		6.5E-04	5.6E-05	6.5E-04	5.6E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	2.0E-03	2.2E-02	2.0E-03
Trichlorobenzenes	0.02	18,197		6.9E-04	6.0E-05	6.9E-04	6.0E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	1.0E-05	1.2E-04	1.0E-05

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

SMU (Insert Value: 1 through 7): 5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 24
Total dredge volume in cy: 140,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 12.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 933

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 6%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 53%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 172 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 696,059

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.6E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.6E-01	2.6E-01	2.7E-01	2.6E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.5E-01	2.4E-01	2.5E-01	2.5E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.2E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.1E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.7E-01	1.3E-01	2.5E-01	2.5E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	3.8E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.1E-01
Toluene	0.02	2.1E+00	1.5E+00	1.5E+00	1.4E+00	1.5E+00	1.5E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.2E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		167		6		4		4	
Benzene	0.00	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.008	0.007	0.005	0.005	0.005	0.005	0.001	0.001
Phenanthrene	0.14	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.02	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.02	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative F2, SMU 6
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 33
Total dredge volume in cy: 245,000
Dredge cut in feet (either average or to max conc): 4.6
Post-dredge water depth (either average or to max conc.) in feet: 8.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 1,633

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 40%
Specific gravity: 2.6
TOC: 1.9%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 172 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 696,059

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				39	3		
Benzene	0.13	100		5.0E-03	3.7E-04	5.0E-03	3.7E-04
Benzo[a]pyrene	1.75	1,096,478		6.8E-02	5.1E-03	6.2E-02	5.0E-03
Chlorobenzene	0.49	500		1.9E-02	1.4E-03	1.9E-02	1.4E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	2,399		2.5E-02	1.8E-03	2.5E-02	1.8E-03
Ethylbenzene	0.22	588		8.4E-03	6.2E-04	8.4E-03	6.2E-04
Fluorene	1.35	15,136		5.3E-02	3.9E-03	5.3E-02	3.9E-03
Hexachlorobenzenes	0.03	1,513,561		1.3E-03	9.6E-05	1.2E-03	9.5E-05
Naphthalene	2.93	2,344		1.2E-01	8.5E-03	1.1E-01	8.5E-03
Phenanthrene	5.18	342,748		2.0E-01	1.5E-02	1.9E-01	1.5E-02
Phenol	0.06	100		2.2E-03	1.6E-04	2.2E-03	1.6E-04
Polychlorinated biphenyls	1.19	1,380,384		4.7E-02	3.4E-03	4.2E-02	3.4E-03
Pyrene	3.63	208,930		1.4E-01	1.1E-02	1.3E-01	1.0E-02
Toluene	0.11	490		4.1E-03	3.1E-04	4.1E-03	3.1E-04
Total mercury (methyl mercury for air emissions)	2.86	366,368	6,961	1.1E-01	8.3E-03	1.0E-01	8.3E-03
Trichlorobenzenes	0.53	18,197		2.1E-02	1.5E-03	2.1E-02	1.5E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	9.4E-04	1.3E-02	9.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.3E-01	1.3E-01
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	4.9E-01	4.9E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.3E-01	6.3E-01
Ethylbenzene	2.2E-01	2.2E-01
Fluorene	1.4E+00	1.4E+00
Hexachlorobenzenes	3.3E-02	3.3E-02
Naphthalene	2.9E+00	2.9E+00
Phenanthrene	5.2E+00	5.2E+00
Phenol	5.5E-02	5.5E-02
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	3.6E+00	3.6E+00
Toluene	1.1E-01	1.1E-01
Total mercury (methyl mercury for air emissions)	2.9E+00	2.9E+00
Trichlorobenzenes	5.3E-01	5.3E-01
Xylene isomers (total)	3.2E-01	3.2E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.13	1.3E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01
Benzo[a]pyrene	1.75	1.7E+02	5.2E-01	5.2E-01	6.3E-01	4.1E-01	4.1E-01
Chlorobenzene	0.49	4.9E+01	2.6E+01	2.6E+01	2.5E+01	2.6E+01	2.6E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	6.3E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01
Ethylbenzene	0.22	2.2E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Fluorene	1.35	1.4E+02	5.0E+00	5.0E+00	4.9E+00	4.9E+00	4.8E+00
Hexachlorobenzenes	0.03	3.3E+00	9.4E-03	9.3E-03	1.2E-02	7.3E-03	7.2E-03
Naphthalene	2.93	2.9E+02	5.6E+01	5.6E+01	5.4E+01	5.6E+01	5.5E+01
Phenanthrene	5.18	5.2E+02	2.1E+00	2.1E+00	2.4E+00	1.7E+00	1.7E+00
Phenol	0.06	5.5E+00	4.8E+00	4.8E+00	4.6E+00	4.8E+00	4.8E+00
Polychlorinated biphenyls	1.19	1.2E+02	3.4E-01	3.4E-01	4.2E-01	2.7E-01	2.7E-01
Pyrene	3.63	3.6E+02	1.8E+00	1.8E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.11	1.1E+01	5.7E+00	5.6E+00	5.5E+00	5.7E+00	5.6E+00
Total mercury (methyl mercury for air emissions)	2.86	2.9E+02	1.1E+00	1.1E+00	1.3E+00	9.4E-01	9.4E-01
Trichlorobenzenes	0.53	5.3E+01	1.7E+00	1.7E+00	1.7E+00	1.6E+00	1.6E+00
Xylene isomers (total)	0.32	3.2E+01	9.2E+00	9.0E+00	8.8E+00	9.2E+00	9.0E+00

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		208		7		5		5	
Benzene	0.13	0.023	0.023	0.018	0.018	0.018	0.018	0.000	0.000
Benzo[a]pyrene	1.75	0.006	0.004	0.006	0.006	0.006	0.000	0.006	0.000
Chlorobenzene	0.49	0.054	0.054	0.054	0.054	0.054	0.054	0.001	0.001
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	0.026	0.026	0.016	0.016	0.015	0.015	0.002	0.002
Ethylbenzene	0.22	0.022	0.022	0.004	0.004	0.004	0.004	0.002	0.002
Fluorene	1.35	0.014	0.013	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.93	0.123	0.122	0.079	0.079	0.079	0.079	0.017	0.017
Phenanthrene	5.18	0.019	0.013	0.019	0.019	0.016	0.016	0.015	0.015
Phenol	0.06	0.010	0.010	0.006	0.006	0.005	0.005	0.001	0.001
Polychlorinated biphenyls	1.19	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	3.63	0.014	0.010	0.014	0.014	0.011	0.011	0.011	0.011
Toluene	0.11	0.012	0.012	0.009	0.009	0.008	0.008	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.86	0.011	0.007	0.009	0.009	0.009	0.009	0.009	0.009
Trichlorobenzenes	0.53	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002
Xylene isomers (total)	0.32	0.020	0.019	0.019	0.019	0.019	0.019	0.001	0.001

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 13.4
Total dredge volume in cy: 89,000
Dredge cut in feet (either average or to max conc): 4.1
Post-dredge water depth (either average or to max conc.) in feet: 7.3

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 593

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 172 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 696,059

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				38	4		
Benzene	1.21	100		4.6E-02	5.4E-03	4.6E-02	5.4E-03
Benzo[a]pyrene	1.75	1,096,478		6.7E-02	7.8E-03	6.1E-02	7.7E-03
Chlorobenzene	12.91	500		4.9E-01	5.7E-02	4.9E-01	5.7E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	2,399		2.1E+00	2.5E-01	2.1E+00	2.5E-01
Ethylbenzene	1.01	588		3.9E-02	4.5E-03	3.9E-02	4.5E-03
Fluorene	6.30	15,136		2.4E-01	2.8E-02	2.4E-01	2.8E-02
Hexachlorobenzenes	0.97	1,513,561		3.7E-02	4.3E-03	3.4E-02	4.2E-03
Naphthalene	26.93	2,344		1.0E+00	1.2E-01	1.0E+00	1.2E-01
Phenanthrene	6.03	342,748		2.3E-01	2.7E-02	2.1E-01	2.7E-02
Phenol	0.09	100		3.6E-03	4.2E-04	3.6E-03	4.2E-04
Polychlorinated biphenyls	1.67	1,380,384		6.4E-02	7.4E-03	5.8E-02	7.3E-03
Pyrene	3.98	208,930		1.5E-01	1.8E-02	1.4E-01	1.8E-02
Toluene	2.57	490		9.8E-02	1.1E-02	9.8E-02	1.1E-02
Total mercury (methyl mercury for air emissions)	20.54	409,471	6,961	7.9E-01	9.1E-02	7.3E-01	9.0E-02
Trichlorobenzenes	9.26	18,197		3.5E-01	4.1E-02	3.5E-01	4.1E-02
Xylene isomers (total)	9.94	1,413		3.8E-01	4.4E-02	3.8E-01	4.4E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F2
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	172	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	696,059	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	5.6E+01	5.6E+01
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	6.3E+00	6.3E+00
Hexachlorobenzenes	9.7E-01	9.7E-01
Naphthalene	2.7E+01	2.7E+01
Phenanthrene	6.0E+00	6.0E+00
Phenol	9.5E-02	9.5E-02
Polychlorinated biphenyls	1.7E+00	1.7E+00
Pyrene	4.0E+00	4.0E+00
Toluene	2.6E+00	2.6E+00
Total mercury (methyl mercury for air emissions)	2.1E+01	2.1E+01
Trichlorobenzenes	9.3E+00	9.3E+00
Xylene isomers (total)	9.9E+00	9.9E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 13.4
Total dredge volume in cy: 89,000
Dredge cut in feet (either average or to max conc): 4.1
Post-dredge water depth (either average or to max conc.) in feet: 7.3

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 593

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 172 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 696,059

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.21	1.2E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	1.75	1.7E+02	4.5E-01	4.5E-01	7.1E-01	3.6E-01	3.6E-01
Chlorobenzene	12.91	1.3E+03	7.3E+02	7.2E+02	7.0E+02	7.3E+02	7.2E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	5.6E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	1.01	1.0E+02	5.3E+01	5.2E+01	5.1E+01	5.3E+01	5.2E+01
Fluorene	6.30	6.3E+02	2.6E+01	2.6E+01	2.6E+01	2.5E+01	2.5E+01
Hexachlorobenzenes	0.97	9.7E+01	2.4E-01	2.3E-01	3.8E-01	1.9E-01	1.9E-01
Naphthalene	26.93	2.7E+03	5.7E+02	5.6E+02	5.5E+02	5.6E+02	5.6E+02
Phenanthrene	6.03	6.0E+02	2.3E+00	2.3E+00	3.1E+00	1.9E+00	1.9E+00
Phenol	0.09	9.5E+00	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Polychlorinated biphenyls	1.67	1.7E+02	4.1E-01	4.1E-01	6.6E-01	3.3E-01	3.3E-01
Pyrene	3.98	4.0E+02	2.0E+00	2.0E+00	2.5E+00	1.7E+00	1.7E+00
Toluene	2.57	2.6E+02	1.5E+02	1.4E+02	1.4E+02	1.5E+02	1.4E+02
Total mercury (methyl mercury for air emissions)	20.54	2.1E+03	7.2E+00	7.2E+00	1.0E+01	6.0E+00	6.0E+00
Trichlorobenzenes	9.26	9.3E+02	3.2E+01	3.2E+01	3.2E+01	3.1E+01	3.1E+01
Xylene isomers (total)	9.94	9.9E+02	3.1E+02	3.0E+02	2.9E+02	3.1E+02	3.0E+02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F2, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F2
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 13.4
Total dredge volume in cy: 89,000
Dredge cut in feet (either average or to max conc): 4.1
Post-dredge water depth (either average or to max conc.) in feet: 7.3

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 593

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 172 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 696,059

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		378		12		8		8	
Benzene	1.21	0.405	0.405	0.313	0.313	0.313	0.313	0.007	0.007
Benzo[a]pyrene	1.75	0.009	0.005	0.009	0.009	0.009	0.000	0.009	0.000
Chlorobenzene	12.91	2.766	2.757	2.766	2.766	2.766	2.766	0.061	0.061
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	4.564	4.495	2.765	2.764	2.622	2.622	0.264	0.264
Ethylbenzene	1.01	0.201	0.200	0.036	0.036	0.034	0.034	0.013	0.013
Fluorene	6.30	0.124	0.114	0.029	0.029	0.029	0.029	0.028	0.028
Hexachlorobenzenes	0.97	0.005	0.003	0.005	0.005	0.005	0.005	0.005	0.005
Naphthalene	26.93	2.228	2.195	1.426	1.426	1.426	1.426	0.267	0.267
Phenanthrene	6.03	0.035	0.020	0.035	0.034	0.028	0.028	0.027	0.027
Phenol	0.09	0.032	0.032	0.020	0.020	0.014	0.014	0.004	0.004
Polychlorinated biphenyls	1.67	0.009	0.005	0.009	0.008	0.009	0.009	0.009	0.009
Pyrene	3.98	0.025	0.016	0.025	0.024	0.018	0.018	0.018	0.018
Toluene	2.57	0.555	0.554	0.403	0.403	0.372	0.372	0.011	0.011
Total mercury (methyl mercury for air emissions)	20.54	0.117	0.067	0.102	0.099	0.100	0.100	0.096	0.096
Trichlorobenzenes	9.26	0.160	0.145	0.140	0.139	0.104	0.104	0.058	0.058
Xylene isomers (total)	9.94	1.181	1.170	1.169	1.169	1.169	1.169	0.050	0.050

SMU (Insert Value: 1 through 7): 1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F3
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 84
Total dredge volume in cy: 1,566,000
Dredge cut in feet (either average or to max conc): 11.6
Post-dredge water depth (either average or to max conc.) in feet: 19.8

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 10,440

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 92%
Specific gravity: 2.36
TOC: 2.0%
In Situ Sediment Density (% solids by weight) 41%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				13	1		
Benzene	5.03	100		6.7E-02	3.1E-03	6.7E-02	3.1E-03
Benzo[a]pyrene	1.09	1,096,478		1.5E-02	6.7E-04	1.4E-02	6.7E-04
Chlorobenzene	19.94	500		2.6E-01	1.2E-02	2.6E-01	1.2E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	39.04	2,399		5.2E-01	2.4E-02	5.2E-01	2.4E-02
Ethylbenzene	5.10	588		6.8E-02	3.1E-03	6.8E-02	3.1E-03
Fluorene	5.11	15,136		6.8E-02	3.1E-03	6.8E-02	3.1E-03
Hexachlorobenzenes	0.27	1,513,561		3.6E-03	1.7E-04	3.5E-03	1.7E-04
Naphthalene	137.19	2,344		1.8E+00	8.4E-02	1.8E+00	8.4E-02
Phenanthrene	7.99	342,748		1.1E-01	4.9E-03	1.0E-01	4.9E-03
Phenol	3.24	100		4.3E-02	2.0E-03	4.3E-02	2.0E-03
Polychlorinated biphenyls	1.01	1,380,384		1.3E-02	6.2E-04	1.3E-02	6.2E-04
Pyrene	3.60	208,930		4.8E-02	2.2E-03	4.7E-02	2.2E-03
Toluene	11.96	490		1.6E-01	7.4E-03	1.6E-01	7.4E-03
Total mercury (methyl mercury for air emissions)	16.06	348,050	6,961	2.1E-01	9.9E-03	2.1E-01	9.9E-03
Trichlorobenzenes	11.33	18,197		1.5E-01	7.0E-03	1.5E-01	7.0E-03
Xylene isomers (total)	77.07	1,413		1.0E+00	4.7E-02	1.0E+00	4.7E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	1,566,000
Dredge cut in feet (either average or to max conc):	11.6
Post-dredge water depth (either average or to max conc.) in feet:	19.8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	10,440
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.0E+00	5.0E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	2.0E+01	2.0E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.9E+01	3.9E+01
Ethylbenzene	5.1E+00	5.1E+00
Fluorene	5.1E+00	5.1E+00
Hexachlorobenzenes	2.7E-01	2.7E-01
Naphthalene	1.4E+02	1.4E+02
Phenanthrene	8.0E+00	8.0E+00
Phenol	3.2E+00	3.2E+00
Polychlorinated biphenyls	1.0E+00	1.0E+00
Pyrene	3.6E+00	3.6E+00
Toluene	1.2E+01	1.2E+01
Total mercury (methyl mercury for air emissions)	1.6E+01	1.6E+01
Trichlorobenzenes	1.1E+01	1.1E+01
Xylene isomers (total)	7.7E+01	7.7E+01

SMU (Insert Value: 1 through 7): 1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F3
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	1,566,000
Dredge cut in feet (either average or to max conc):	11.6
Post-dredge water depth (either average or to max conc.) in feet:	19.8

Dredging Characteristics

Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	10,440
Diameter in feet around dredge head to evaluate water quality (1):	100

Sediment Physical Characteristics

Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	5.03	5.0E+02	4.4E+02	4.3E+02	4.2E+02	4.4E+02	4.3E+02
Benzo[a]pyrene	1.09	1.1E+02	1.7E-01	1.7E-01	3.8E-01	1.3E-01	1.3E-01
Chlorobenzene	19.94	2.0E+03	1.0E+03	1.0E+03	1.0E+03	1.0E+03	1.0E+03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	39.04	3.9E+03	7.0E+02	7.0E+02	6.8E+02	7.0E+02	6.9E+02
Ethylbenzene	5.10	5.1E+02	2.4E+02	2.4E+02	2.3E+02	2.4E+02	2.4E+02
Fluorene	5.11	5.1E+02	1.8E+01	1.7E+01	1.8E+01	1.7E+01	1.7E+01
Hexachlorobenzenes	0.27	2.7E+01	3.9E-02	3.8E-02	9.1E-02	3.0E-02	2.9E-02
Naphthalene	137.19	1.4E+04	2.5E+03	2.5E+03	2.4E+03	2.5E+03	2.4E+03
Phenanthrene	7.99	8.0E+02	2.1E+00	2.0E+00	3.5E+00	1.7E+00	1.6E+00
Phenol	3.24	3.2E+02	2.8E+02	2.8E+02	2.7E+02	2.8E+02	2.8E+02
Polychlorinated biphenyls	1.01	1.0E+02	1.5E-01	1.5E-01	3.4E-01	1.1E-01	1.1E-01
Pyrene	3.60	3.6E+02	1.3E+00	1.3E+00	1.9E+00	1.1E+00	1.1E+00
Toluene	11.96	1.2E+03	6.3E+02	6.1E+02	6.1E+02	6.3E+02	6.1E+02
Total mercury (methyl mercury for air emissions)	16.06	1.6E+03	4.1E+00	4.1E+00	7.1E+00	3.4E+00	3.4E+00
Trichlorobenzenes	11.33	1.1E+03	3.3E+01	3.2E+01	3.3E+01	3.2E+01	3.1E+01
Xylene isomers (total)	77.07	7.7E+03	2.1E+03	2.0E+03	2.0E+03	2.1E+03	2.0E+03

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	1,566,000
Dredge cut in feet (either average or to max conc):	11.6
Post-dredge water depth (either average or to max conc.) in feet:	19.8
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	10,440
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		56		2		1		1	
Benzene	5.03	0.240	0.240	0.185	0.185	0.185	0.185	0.004	0.004
Benzo[a]pyrene	1.09	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	19.94	0.576	0.576	0.576	0.576	0.576	0.576	0.013	0.013
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	39.04	0.412	0.410	0.250	0.250	0.237	0.237	0.026	0.026
Ethylbenzene	5.10	0.136	0.136	0.024	0.024	0.023	0.023	0.009	0.009
Fluorene	5.11	0.013	0.013	0.003	0.003	0.003	0.003	0.003	0.003
Hexachlorobenzenes	0.27	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	137.19	1.454	1.450	0.934	0.934	0.934	0.934	0.181	0.181
Phenanthrene	7.99	0.006	0.005	0.006	0.006	0.005	0.005	0.005	0.005
Phenol	3.24	0.158	0.158	0.101	0.101	0.071	0.071	0.020	0.020
Polychlorinated biphenyls	1.01	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	3.60	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
Toluene	11.96	0.349	0.348	0.253	0.253	0.233	0.233	0.007	0.007
Total mercury (methyl mercury for air emissions)	16.06	0.012	0.011	0.011	0.011	0.011	0.011	0.010	0.010
Trichlorobenzenes	11.33	0.025	0.024	0.022	0.022	0.016	0.016	0.009	0.009
Xylene isomers (total)	77.07	1.187	1.185	1.176	1.176	1.176	1.176	0.053	0.053

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F3, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				19	3		
Benzene	1.80	100		3.4E-02	4.6E-03	3.4E-02	4.6E-03
Benzo[a]pyrene	1.14	1,096,478		2.2E-02	2.9E-03	2.1E-02	2.9E-03
Chlorobenzene	14.29	500		2.7E-01	3.6E-02	2.7E-01	3.6E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	2,399		5.8E-02	7.8E-03	5.8E-02	7.8E-03
Ethylbenzene	1.03	588		1.9E-02	2.6E-03	1.9E-02	2.6E-03
Fluorene	1.57	15,136		3.0E-02	4.0E-03	3.0E-02	4.0E-03
Hexachlorobenzenes	0.02	1,513,561		2.9E-04	3.8E-05	2.7E-04	3.8E-05
Naphthalene	88.57	2,344		1.7E+00	2.3E-01	1.7E+00	2.3E-01
Phenanthrene	5.33	342,748		1.0E-01	1.4E-02	9.8E-02	1.4E-02
Phenol	0.41	100		7.8E-03	1.0E-03	7.8E-03	1.0E-03
Polychlorinated biphenyls	1.33	1,380,384		2.5E-02	3.4E-03	2.4E-02	3.4E-03
Pyrene	2.69	208,930		5.1E-02	6.8E-03	5.0E-02	6.8E-03
Toluene	1.76	490		3.3E-02	4.5E-03	3.3E-02	4.5E-03
Total mercury (methyl mercury for air emissions)	2.03	464,067	6,961	3.8E-02	5.2E-03	3.7E-02	5.1E-03
Trichlorobenzenes	0.37	18,197		7.0E-03	9.4E-04	7.0E-03	9.4E-04
Xylene isomers (total)	11.55	1,413		2.2E-01	2.9E-02	2.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	1.4E+01	1.4E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E+00	3.0E+00
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	1.6E+00	1.6E+00
Hexachlorobenzenes	1.5E-02	1.5E-02
Naphthalene	8.9E+01	8.9E+01
Phenanthrene	5.3E+00	5.3E+00
Phenol	4.1E-01	4.1E-01
Polychlorinated biphenyls	1.3E+00	1.3E+00
Pyrene	2.7E+00	2.7E+00
Toluene	1.8E+00	1.8E+00
Total mercury (methyl mercury for air emissions)	2.0E+00	2.0E+00
Trichlorobenzenes	3.7E-01	3.7E-01
Xylene isomers (total)	1.2E+01	1.2E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F3, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F3
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10
Total dredge volume in cy: 169,000
Dredge cut in feet (either average or to max conc): 10.7
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 1,127

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 98%
Specific gravity: 2.52
TOC: 1.5%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.80	1.8E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02
Benzo[a]pyrene	1.14	1.1E+02	1.9E-01	1.9E-01	5.2E-01	1.6E-01	1.5E-01
Chlorobenzene	14.29	1.4E+03	8.5E+02	8.4E+02	8.2E+02	8.5E+02	8.4E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	3.0E+02	6.9E+01	6.9E+01	6.7E+01	6.9E+01	6.9E+01
Ethylbenzene	1.03	1.0E+02	5.7E+01	5.6E+01	5.5E+01	5.7E+01	5.6E+01
Fluorene	1.57	1.6E+02	7.0E+00	7.0E+00	7.2E+00	6.9E+00	6.8E+00
Hexachlorobenzenes	0.02	1.5E+00	2.2E-03	2.2E-03	6.7E-03	1.8E-03	1.8E-03
Naphthalene	88.57	8.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03
Phenanthrene	5.33	5.3E+02	1.6E+00	1.6E+00	3.2E+00	1.4E+00	1.4E+00
Phenol	0.41	4.1E+01	3.7E+01	3.7E+01	3.6E+01	3.7E+01	3.7E+01
Polychlorinated biphenyls	1.33	1.3E+02	2.0E-01	2.0E-01	5.9E-01	1.7E-01	1.7E-01
Pyrene	2.69	2.7E+02	1.2E+00	1.2E+00	1.9E+00	1.0E+00	1.0E+00
Toluene	1.76	1.8E+02	1.1E+02	1.0E+02	1.0E+02	1.1E+02	1.0E+02
Total mercury (methyl mercury for air emissions)	2.03	2.0E+02	5.1E-01	5.1E-01	1.1E+00	4.3E-01	4.3E-01
Trichlorobenzenes	0.37	3.7E+01	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Xylene isomers (total)	11.55	1.2E+03	3.9E+02	3.8E+02	3.7E+02	3.8E+02	3.8E+02

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		214		7		5		5	
Benzene	1.80	0.347	0.347	0.268	0.268	0.268	0.268	0.006	0.006
Benzo[a]pyrene	1.14	0.003	0.002	0.003	0.003	0.003	0.000	0.003	0.000
Chlorobenzene	14.29	1.824	1.821	1.824	1.823	1.824	1.824	0.039	0.039
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	0.154	0.153	0.093	0.093	0.088	0.088	0.008	0.008
Ethylbenzene	1.03	0.122	0.122	0.022	0.022	0.021	0.021	0.008	0.008
Fluorene	1.57	0.019	0.018	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	88.57	4.524	4.491	2.890	2.890	2.890	2.890	0.527	0.527
Phenanthrene	5.33	0.017	0.012	0.017	0.017	0.014	0.014	0.014	0.014
Phenol	0.41	0.080	0.080	0.051	0.051	0.036	0.036	0.010	0.010
Polychlorinated biphenyls	1.33	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	2.69	0.009	0.007	0.009	0.009	0.007	0.007	0.007	0.007
Toluene	1.76	0.226	0.226	0.164	0.164	0.151	0.151	0.004	0.004
Total mercury (methyl mercury for air emissions)	2.03	0.006	0.004	0.006	0.006	0.006	0.006	0.005	0.005
Trichlorobenzenes	0.37	0.004	0.004	0.003	0.003	0.003	0.003	0.001	0.001
Xylene isomers (total)	11.55	0.840	0.836	0.832	0.831	0.832	0.832	0.034	0.034

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.1E-03	3.9E-02	5.1E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.6E-05	5.9E-04	7.6E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.1E-06	6.8E-05	9.1E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.3E-04	4.9E-03	6.3E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	8.0E-04	6.0E-03	8.0E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.5E-04	6.6E-03	8.5E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7): 3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F3
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10.8
Total dredge volume in cy: 75,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 500

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 28%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

SMU (Insert Value: 1 through 7): 3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F3
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10.8
Total dredge volume in cy: 75,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 500

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 28%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		207		7		5		5	
Benzene	1.77	0.343	0.343	0.265	0.265	0.265	0.265	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.016	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.043	0.043	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.027	0.027	0.026	0.026	0.026	0.026	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F3, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				55	5		
Benzene	0.01	100		3.1E-04	2.8E-05	3.1E-04	2.8E-05
Benzo[a]pyrene	0.08	1,096,478		4.4E-03	4.0E-04	4.0E-03	3.9E-04
Chlorobenzene	0.01	500		3.5E-04	3.2E-05	3.5E-04	3.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2,399		1.5E-03	1.4E-04	1.5E-03	1.4E-04
Ethylbenzene	0.01	588		6.6E-04	5.9E-05	6.6E-04	5.9E-05
Fluorene	0.03	15,136		1.8E-03	1.6E-04	1.7E-03	1.6E-04
Hexachlorobenzenes	0.11	1,513,561		6.0E-03	5.4E-04	5.4E-03	5.4E-04
Naphthalene	0.07	2,344		4.1E-03	3.7E-04	4.1E-03	3.7E-04
Phenanthrene	0.08	342,748		4.6E-03	4.1E-04	4.2E-03	4.1E-04
Phenol	0.08	100		4.5E-03	4.1E-04	4.5E-03	4.1E-04
Polychlorinated biphenyls	0.37	1,380,384		2.0E-02	1.8E-03	1.8E-02	1.8E-03
Pyrene	0.19	208,930		1.0E-02	9.3E-04	9.5E-03	9.2E-04
Toluene	0.00	490		2.7E-04	2.4E-05	2.7E-04	2.4E-05
Total mercury (methyl mercury for air emissions)	7.46	497,214	6,961	4.1E-01	3.7E-02	3.8E-01	3.7E-02
Trichlorobenzenes	0.02	18,197		9.4E-04	8.5E-05	9.2E-04	8.5E-05
Xylene isomers (total)	0.09	1,413		4.9E-03	4.4E-04	4.9E-03	4.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F3, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.5E-03	5.5E-03
Benzo[a]pyrene	8.0E-02	8.0E-02
Chlorobenzene	6.3E-03	6.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.7E-02	2.7E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	7.5E-02	7.5E-02
Phenanthrene	8.3E-02	8.3E-02
Phenol	8.1E-02	8.1E-02
Polychlorinated biphenyls	3.7E-01	3.7E-01
Pyrene	1.9E-01	1.9E-01
Toluene	4.9E-03	4.9E-03
Total mercury (methyl mercury for air emissions)	7.5E+00	7.5E+00
Trichlorobenzenes	1.7E-02	1.7E-02
Xylene isomers (total)	8.9E-02	8.9E-02

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.01	5.5E-01	5.1E-01	5.0E-01	4.9E-01	5.1E-01	5.0E-01
Benzo[a]pyrene	0.08	8.0E+00	1.9E-02	1.9E-02	3.9E-02	1.6E-02	1.6E-02
Chlorobenzene	0.01	6.3E-01	3.9E-01	3.8E-01	3.7E-01	3.9E-01	3.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2.7E+00	6.5E-01	6.5E-01	6.3E-01	6.5E-01	6.5E-01
Ethylbenzene	0.01	1.2E+00	6.8E-01	6.7E-01	6.5E-01	6.8E-01	6.7E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.4E-02	2.3E-02	5.1E-02	2.0E-02	1.9E-02
Naphthalene	0.07	7.5E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Phenanthrene	0.08	8.3E+00	3.2E-02	3.1E-02	5.2E-02	2.8E-02	2.7E-02
Phenol	0.08	8.1E+00	7.4E+00	7.4E+00	7.1E+00	7.4E+00	7.4E+00
Polychlorinated biphenyls	0.37	3.7E+01	8.3E-02	8.3E-02	1.8E-01	6.9E-02	6.9E-02
Pyrene	0.19	1.9E+01	9.7E-02	9.6E-02	1.4E-01	8.6E-02	8.5E-02
Toluene	0.00	4.9E-01	3.0E-01	3.0E-01	2.9E-01	3.0E-01	3.0E-01
Total mercury (methyl mercury for air emissions)	7.46	7.5E+02	2.4E+00	2.4E+00	4.2E+00	2.0E+00	2.0E+00
Trichlorobenzenes	0.02	1.7E+00	6.9E-02	6.8E-02	7.1E-02	6.8E-02	6.7E-02
Xylene isomers (total)	0.09	8.9E+00	3.1E+00	3.1E+00	3.0E+00	3.1E+00	3.0E+00

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		337		12		8		8	
Benzene	0.01	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.01	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	0.07	0.006	0.006	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.08	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.08	0.025	0.025	0.016	0.016	0.011	0.011	0.003	0.003
Polychlorinated biphenyls	0.37	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Pyrene	0.19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	7.46	0.045	0.028	0.040	0.040	0.040	0.040	0.039	0.039
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.09	0.011	0.011	0.011	0.011	0.011	0.011	0.000	0.000

SMU (Insert Value: 1 through 7): 5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F3
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 24
Total dredge volume in cy: 140,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 12.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 933

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 6%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 53%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				31	3		
Benzene	0.00	100		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	2.8E-04	3.1E-03	2.8E-04
Chlorobenzene	0.00	500		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	1.0E-04	1.2E-03	1.0E-04
Ethylbenzene	0.00	588		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Fluorene	0.05	15,136		1.7E-03	1.4E-04	1.6E-03	1.4E-04
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	2.0E-05	2.2E-04	2.0E-05
Naphthalene	0.14	2,344		4.2E-03	3.7E-04	4.2E-03	3.7E-04
Phenanthrene	0.14	342,748		4.4E-03	3.8E-04	4.2E-03	3.8E-04
Phenol	0.02	100		5.3E-04	4.6E-05	5.3E-04	4.6E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	6.7E-04	7.3E-03	6.6E-04
Pyrene	0.21	208,930		6.5E-03	5.6E-04	6.3E-03	5.6E-04
Toluene	0.02	490		6.5E-04	5.6E-05	6.5E-04	5.6E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	2.0E-03	2.2E-02	2.0E-03
Trichlorobenzenes	0.02	18,197		6.9E-04	6.0E-05	6.9E-04	6.0E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	1.0E-05	1.2E-04	1.0E-05

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

SMU (Insert Value: 1 through 7): 5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F3
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 24
Total dredge volume in cy: 140,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 12.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 933

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 6%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 53%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.8E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.6E-01	2.6E-01	2.7E-01	2.6E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.5E-01	2.4E-01	2.5E-01	2.5E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.2E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.3E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.7E-01	1.3E-01	2.5E-01	2.7E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	4.3E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.5E-01
Toluene	0.02	2.1E+00	1.5E+00	1.5E+00	1.4E+00	1.5E+00	1.5E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.3E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F3, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		167		6		4		4	
Benzene	0.00	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.008	0.007	0.005	0.005	0.005	0.005	0.001	0.001
Phenanthrene	0.14	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.02	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.02	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F3, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				39	3		
Benzene	0.13	100		5.0E-03	3.7E-04	5.0E-03	3.7E-04
Benzo[a]pyrene	1.75	1,096,478		6.8E-02	5.1E-03	6.2E-02	5.0E-03
Chlorobenzene	0.49	500		1.9E-02	1.4E-03	1.9E-02	1.4E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	2,399		2.5E-02	1.8E-03	2.5E-02	1.8E-03
Ethylbenzene	0.22	588		8.4E-03	6.2E-04	8.4E-03	6.2E-04
Fluorene	1.35	15,136		5.3E-02	3.9E-03	5.3E-02	3.9E-03
Hexachlorobenzenes	0.03	1,513,561		1.3E-03	9.6E-05	1.2E-03	9.5E-05
Naphthalene	2.93	2,344		1.2E-01	8.5E-03	1.1E-01	8.5E-03
Phenanthrene	5.18	342,748		2.0E-01	1.5E-02	1.9E-01	1.5E-02
Phenol	0.06	100		2.2E-03	1.6E-04	2.2E-03	1.6E-04
Polychlorinated biphenyls	1.19	1,380,384		4.7E-02	3.4E-03	4.2E-02	3.4E-03
Pyrene	3.63	208,930		1.4E-01	1.1E-02	1.3E-01	1.0E-02
Toluene	0.11	490		4.1E-03	3.1E-04	4.1E-03	3.1E-04
Total mercury (methyl mercury for air emissions)	2.86	366,368	6,961	1.1E-01	8.3E-03	1.0E-01	8.3E-03
Trichlorobenzenes	0.53	18,197		2.1E-02	1.5E-03	2.1E-02	1.5E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	9.4E-04	1.3E-02	9.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.3E-01	1.3E-01
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	4.9E-01	4.9E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.3E-01	6.3E-01
Ethylbenzene	2.2E-01	2.2E-01
Fluorene	1.4E+00	1.4E+00
Hexachlorobenzenes	3.3E-02	3.3E-02
Naphthalene	2.9E+00	2.9E+00
Phenanthrene	5.2E+00	5.2E+00
Phenol	5.5E-02	5.5E-02
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	3.6E+00	3.6E+00
Toluene	1.1E-01	1.1E-01
Total mercury (methyl mercury for air emissions)	2.9E+00	2.9E+00
Trichlorobenzenes	5.3E-01	5.3E-01
Xylene isomers (total)	3.2E-01	3.2E-01

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.13	1.3E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01
Benzo[a]pyrene	1.75	1.7E+02	5.2E-01	5.2E-01	6.3E-01	4.1E-01	4.1E-01
Chlorobenzene	0.49	4.9E+01	2.6E+01	2.6E+01	2.5E+01	2.6E+01	2.6E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	6.3E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01
Ethylbenzene	0.22	2.2E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Fluorene	1.35	1.4E+02	5.0E+00	5.0E+00	4.9E+00	4.9E+00	4.8E+00
Hexachlorobenzenes	0.03	3.3E+00	9.4E-03	9.3E-03	1.2E-02	7.3E-03	7.2E-03
Naphthalene	2.93	2.9E+02	5.6E+01	5.6E+01	5.4E+01	5.6E+01	5.5E+01
Phenanthrene	5.18	5.2E+02	2.1E+00	2.1E+00	2.4E+00	1.7E+00	1.7E+00
Phenol	0.06	5.5E+00	4.8E+00	4.8E+00	4.6E+00	4.8E+00	4.8E+00
Polychlorinated biphenyls	1.19	1.2E+02	3.4E-01	3.4E-01	4.2E-01	2.7E-01	2.7E-01
Pyrene	3.63	3.6E+02	1.8E+00	1.8E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.11	1.1E+01	5.7E+00	5.6E+00	5.5E+00	5.7E+00	5.6E+00
Total mercury (methyl mercury for air emissions)	2.86	2.9E+02	1.1E+00	1.1E+00	1.3E+00	9.4E-01	9.4E-01
Trichlorobenzenes	0.53	5.3E+01	1.7E+00	1.7E+00	1.7E+00	1.6E+00	1.6E+00
Xylene isomers (total)	0.32	3.2E+01	9.2E+00	9.0E+00	8.8E+00	9.2E+00	9.0E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F3, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		208		7		5		5	
Benzene	0.13	0.023	0.023	0.018	0.018	0.018	0.018	0.000	0.000
Benzo[a]pyrene	1.75	0.006	0.004	0.006	0.006	0.006	0.000	0.006	0.000
Chlorobenzene	0.49	0.054	0.054	0.054	0.054	0.054	0.054	0.001	0.001
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	0.026	0.026	0.016	0.016	0.015	0.015	0.002	0.002
Ethylbenzene	0.22	0.022	0.022	0.004	0.004	0.004	0.004	0.002	0.002
Fluorene	1.35	0.014	0.013	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.93	0.123	0.122	0.079	0.079	0.079	0.079	0.017	0.017
Phenanthrene	5.18	0.019	0.013	0.019	0.019	0.016	0.016	0.015	0.015
Phenol	0.06	0.010	0.010	0.006	0.006	0.005	0.005	0.001	0.001
Polychlorinated biphenyls	1.19	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	3.63	0.014	0.010	0.014	0.014	0.011	0.011	0.011	0.011
Toluene	0.11	0.012	0.012	0.009	0.009	0.008	0.008	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.86	0.011	0.007	0.009	0.009	0.009	0.009	0.009	0.009
Trichlorobenzenes	0.53	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002
Xylene isomers (total)	0.32	0.020	0.019	0.019	0.019	0.019	0.019	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative F3, SMU 7
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				38	4		
Benzene	1.21	100		4.6E-02	5.4E-03	4.6E-02	5.4E-03
Benzo[a]pyrene	1.75	1,096,478		6.7E-02	7.8E-03	6.1E-02	7.7E-03
Chlorobenzene	12.91	500		4.9E-01	5.7E-02	4.9E-01	5.7E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	2,399		2.1E+00	2.5E-01	2.1E+00	2.5E-01
Ethylbenzene	1.01	588		3.9E-02	4.5E-03	3.9E-02	4.5E-03
Fluorene	6.30	15,136		2.4E-01	2.8E-02	2.4E-01	2.8E-02
Hexachlorobenzenes	0.97	1,513,561		3.7E-02	4.3E-03	3.4E-02	4.2E-03
Naphthalene	26.93	2,344		1.0E+00	1.2E-01	1.0E+00	1.2E-01
Phenanthrene	6.03	342,748		2.3E-01	2.7E-02	2.1E-01	2.7E-02
Phenol	0.09	100		3.6E-03	4.2E-04	3.6E-03	4.2E-04
Polychlorinated biphenyls	1.67	1,380,384		6.4E-02	7.4E-03	5.8E-02	7.3E-03
Pyrene	3.98	208,930		1.5E-01	1.8E-02	1.4E-01	1.8E-02
Toluene	2.57	490		9.8E-02	1.1E-02	9.8E-02	1.1E-02
Total mercury (methyl mercury for air emissions)	20.54	409,471	6,961	7.9E-01	9.1E-02	7.3E-01	9.0E-02
Trichlorobenzenes	9.26	18,197		3.5E-01	4.1E-02	3.5E-01	4.1E-02
Xylene isomers (total)	9.94	1,413		3.8E-01	4.4E-02	3.8E-01	4.4E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	5.6E+01	5.6E+01
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	6.3E+00	6.3E+00
Hexachlorobenzenes	9.7E-01	9.7E-01
Naphthalene	2.7E+01	2.7E+01
Phenanthrene	6.0E+00	6.0E+00
Phenol	9.5E-02	9.5E-02
Polychlorinated biphenyls	1.7E+00	1.7E+00
Pyrene	4.0E+00	4.0E+00
Toluene	2.6E+00	2.6E+00
Total mercury (methyl mercury for air emissions)	2.1E+01	2.1E+01
Trichlorobenzenes	9.3E+00	9.3E+00
Xylene isomers (total)	9.9E+00	9.9E+00

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.21	1.2E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	1.75	1.7E+02	4.5E-01	4.5E-01	7.1E-01	3.6E-01	3.6E-01
Chlorobenzene	12.91	1.3E+03	7.3E+02	7.2E+02	7.0E+02	7.3E+02	7.2E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	5.6E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	1.01	1.0E+02	5.3E+01	5.2E+01	5.1E+01	5.3E+01	5.2E+01
Fluorene	6.30	6.3E+02	2.6E+01	2.6E+01	2.6E+01	2.5E+01	2.5E+01
Hexachlorobenzenes	0.97	9.7E+01	2.4E-01	2.3E-01	3.8E-01	1.9E-01	1.9E-01
Naphthalene	26.93	2.7E+03	5.7E+02	5.6E+02	5.5E+02	5.6E+02	5.6E+02
Phenanthrene	6.03	6.0E+02	2.3E+00	2.3E+00	3.1E+00	1.9E+00	1.9E+00
Phenol	0.09	9.5E+00	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Polychlorinated biphenyls	1.67	1.7E+02	4.1E-01	4.1E-01	6.6E-01	3.3E-01	3.3E-01
Pyrene	3.98	4.0E+02	2.0E+00	2.0E+00	2.5E+00	1.7E+00	1.7E+00
Toluene	2.57	2.6E+02	1.5E+02	1.4E+02	1.4E+02	1.5E+02	1.4E+02
Total mercury (methyl mercury for air emissions)	20.54	2.1E+03	7.2E+00	7.2E+00	1.0E+01	6.0E+00	6.0E+00
Trichlorobenzenes	9.26	9.3E+02	3.2E+01	3.2E+01	3.2E+01	3.1E+01	3.1E+01
Xylene isomers (total)	9.94	9.9E+02	3.1E+02	3.0E+02	2.9E+02	3.1E+02	3.0E+02

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative F3, SMU 7
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F3
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		378		12		8		8	
Benzene	1.21	0.405	0.405	0.313	0.313	0.313	0.313	0.007	0.007
Benzo[a]pyrene	1.75	0.009	0.005	0.009	0.009	0.009	0.000	0.009	0.000
Chlorobenzene	12.91	2.766	2.757	2.766	2.766	2.766	2.766	0.061	0.061
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	4.564	4.495	2.765	2.764	2.622	2.622	0.264	0.264
Ethylbenzene	1.01	0.201	0.200	0.036	0.036	0.034	0.034	0.013	0.013
Fluorene	6.30	0.124	0.114	0.029	0.029	0.029	0.029	0.028	0.028
Hexachlorobenzenes	0.97	0.005	0.003	0.005	0.005	0.005	0.005	0.005	0.005
Naphthalene	26.93	2.228	2.195	1.426	1.426	1.426	1.426	0.267	0.267
Phenanthrene	6.03	0.035	0.020	0.035	0.034	0.028	0.028	0.027	0.027
Phenol	0.09	0.032	0.032	0.020	0.020	0.014	0.014	0.004	0.004
Polychlorinated biphenyls	1.67	0.009	0.005	0.009	0.008	0.009	0.009	0.009	0.009
Pyrene	3.98	0.025	0.016	0.025	0.024	0.018	0.018	0.018	0.018
Toluene	2.57	0.555	0.554	0.403	0.403	0.372	0.372	0.011	0.011
Total mercury (methyl mercury for air emissions)	20.54	0.117	0.067	0.102	0.099	0.100	0.100	0.096	0.096
Trichlorobenzenes	9.26	0.160	0.145	0.140	0.139	0.104	0.104	0.058	0.058
Xylene isomers (total)	9.94	1.181	1.170	1.169	1.169	1.169	1.169	0.050	0.050

SMU (Insert Value: 1 through 7): 1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-5
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F4
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 84
Total dredge volume in cy: 2,094,000
Dredge cut in feet (either average or to max conc): 15.5
Post-dredge water depth (either average or to max conc.) in feet: 23.1

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 13,960

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 92%
Specific gravity: 2.36
TOC: 2.0%
In Situ Sediment Density (% solids by weight) 41%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				11	1		
Benzene	4.55	100		5.2E-02	2.4E-03	5.2E-02	2.4E-03
Benzo[a]pyrene	0.99	1,096,478		1.1E-02	5.2E-04	1.1E-02	5.2E-04
Chlorobenzene	16.81	500		1.9E-01	8.9E-03	1.9E-01	8.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	32.18	2,399		3.7E-01	1.7E-02	3.7E-01	1.7E-02
Ethylbenzene	5.15	588		5.9E-02	2.7E-03	5.9E-02	2.7E-03
Fluorene	4.48	15,136		5.1E-02	2.4E-03	5.1E-02	2.4E-03
Hexachlorobenzenes	0.22	1,513,561		2.5E-03	1.2E-04	2.5E-03	1.2E-04
Naphthalene	118.51	2,344		1.3E+00	6.2E-02	1.3E+00	6.2E-02
Phenanthrene	7.28	342,748		8.3E-02	3.8E-03	8.1E-02	3.8E-03
Phenol	3.52	100		4.0E-02	1.9E-03	4.0E-02	1.9E-03
Polychlorinated biphenyls	0.91	1,380,384		1.0E-02	4.8E-04	1.0E-02	4.8E-04
Pyrene	3.15	208,930		3.6E-02	1.7E-03	3.5E-02	1.7E-03
Toluene	10.64	490		1.2E-01	5.6E-03	1.2E-01	5.6E-03
Total mercury (methyl mercury for air emissions)	13.87	348,050	6,961	1.6E-01	7.3E-03	1.5E-01	7.3E-03
Trichlorobenzenes	9.13	18,197		1.0E-01	4.8E-03	1.0E-01	4.8E-03
Xylene isomers (total)	72.19	1,413		8.2E-01	3.8E-02	8.2E-01	3.8E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative F4, SMU 1
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-5
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,094,000
Dredge cut in feet (either average or to max conc):	15.5
Post-dredge water depth (either average or to max conc.) in feet:	23.1
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	13,960
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	4.6E+00	4.6E+00
Benzo[a]pyrene	9.9E-01	9.9E-01
Chlorobenzene	1.7E+01	1.7E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.2E+01	3.2E+01
Ethylbenzene	5.2E+00	5.2E+00
Fluorene	4.5E+00	4.5E+00
Hexachlorobenzenes	2.2E-01	2.2E-01
Naphthalene	1.2E+02	1.2E+02
Phenanthrene	7.3E+00	7.3E+00
Phenol	3.5E+00	3.5E+00
Polychlorinated biphenyls	9.1E-01	9.1E-01
Pyrene	3.2E+00	3.2E+00
Toluene	1.1E+01	1.1E+01
Total mercury (methyl mercury for air emissions)	1.4E+01	1.4E+01
Trichlorobenzenes	9.1E+00	9.1E+00
Xylene isomers (total)	7.2E+01	7.2E+01

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-5
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,094,000
Dredge cut in feet (either average or to max conc):	15.5
Post-dredge water depth (either average or to max conc.) in feet:	23.1
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	13,960
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	4.55	4.6E+02	4.0E+02	3.8E+02	3.8E+02	4.0E+02	3.8E+02
Benzo[a]pyrene	0.99	9.9E+01	1.5E-01	1.5E-01	3.4E-01	1.2E-01	1.2E-01
Chlorobenzene	16.81	1.7E+03	8.8E+02	8.5E+02	8.4E+02	8.8E+02	8.5E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	32.18	3.2E+03	5.8E+02	5.7E+02	5.6E+02	5.8E+02	5.7E+02
Ethylbenzene	5.15	5.2E+02	2.5E+02	2.4E+02	2.4E+02	2.5E+02	2.4E+02
Fluorene	4.48	4.5E+02	1.5E+01	1.5E+01	1.6E+01	1.5E+01	1.5E+01
Hexachlorobenzenes	0.22	2.2E+01	3.2E-02	3.1E-02	7.4E-02	2.5E-02	2.4E-02
Naphthalene	118.51	1.2E+04	2.2E+03	2.1E+03	2.1E+03	2.2E+03	2.1E+03
Phenanthrene	7.28	7.3E+02	1.9E+00	1.8E+00	3.2E+00	1.5E+00	1.5E+00
Phenol	3.52	3.5E+02	3.1E+02	3.1E+02	2.9E+02	3.1E+02	3.1E+02
Polychlorinated biphenyls	0.91	9.1E+01	1.3E-01	1.3E-01	3.0E-01	1.0E-01	1.0E-01
Pyrene	3.15	3.2E+02	1.1E+00	1.1E+00	1.7E+00	9.5E-01	9.4E-01
Toluene	10.64	1.1E+03	5.6E+02	5.5E+02	5.4E+02	5.6E+02	5.4E+02
Total mercury (methyl mercury for air emissions)	13.87	1.4E+03	3.6E+00	3.6E+00	6.1E+00	2.9E+00	2.9E+00
Trichlorobenzenes	9.13	9.1E+02	2.6E+01	2.6E+01	2.7E+01	2.6E+01	2.5E+01
Xylene isomers (total)	72.19	7.2E+03	2.0E+03	1.9E+03	1.9E+03	2.0E+03	1.9E+03

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-5
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,094,000
Dredge cut in feet (either average or to max conc):	15.5
Post-dredge water depth (either average or to max conc.) in feet:	23.1
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	13,960
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		48		1		1		1	
Benzene	4.55	0.186	0.186	0.144	0.144	0.144	0.144	0.003	0.003
Benzo[a]pyrene	0.99	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	16.81	0.416	0.416	0.416	0.416	0.416	0.416	0.009	0.009
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	32.18	0.291	0.290	0.177	0.177	0.168	0.168	0.018	0.018
Ethylbenzene	5.15	0.118	0.117	0.021	0.021	0.020	0.020	0.008	0.008
Fluorene	4.48	0.010	0.009	0.002	0.002	0.002	0.002	0.002	0.002
Hexachlorobenzenes	0.22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	118.51	1.077	1.075	0.691	0.691	0.691	0.691	0.134	0.134
Phenanthrene	7.28	0.005	0.004	0.005	0.005	0.004	0.004	0.004	0.004
Phenol	3.52	0.148	0.148	0.094	0.094	0.066	0.066	0.019	0.019
Polychlorinated biphenyls	0.91	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	3.15	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Toluene	10.64	0.266	0.266	0.193	0.193	0.178	0.178	0.006	0.006
Total mercury (methyl mercury for air emissions)	13.87	0.009	0.008	0.008	0.008	0.008	0.008	0.008	0.008
Trichlorobenzenes	9.13	0.017	0.017	0.015	0.015	0.011	0.011	0.007	0.007
Xylene isomers (total)	72.19	0.954	0.952	0.944	0.944	0.944	0.944	0.043	0.043

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				19	3		
Benzene	1.80	100		3.4E-02	4.6E-03	3.4E-02	4.6E-03
Benzo[a]pyrene	1.14	1,096,478		2.2E-02	2.9E-03	2.1E-02	2.9E-03
Chlorobenzene	14.29	500		2.7E-01	3.6E-02	2.7E-01	3.6E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	2,399		5.8E-02	7.8E-03	5.8E-02	7.8E-03
Ethylbenzene	1.03	588		1.9E-02	2.6E-03	1.9E-02	2.6E-03
Fluorene	1.57	15,136		3.0E-02	4.0E-03	3.0E-02	4.0E-03
Hexachlorobenzenes	0.02	1,513,561		2.9E-04	3.8E-05	2.7E-04	3.8E-05
Naphthalene	88.57	2,344		1.7E+00	2.3E-01	1.7E+00	2.3E-01
Phenanthrene	5.33	342,748		1.0E-01	1.4E-02	9.8E-02	1.4E-02
Phenol	0.41	100		7.8E-03	1.0E-03	7.8E-03	1.0E-03
Polychlorinated biphenyls	1.33	1,380,384		2.5E-02	3.4E-03	2.4E-02	3.4E-03
Pyrene	2.69	208,930		5.1E-02	6.8E-03	5.0E-02	6.8E-03
Toluene	1.76	490		3.3E-02	4.5E-03	3.3E-02	4.5E-03
Total mercury (methyl mercury for air emissions)	2.03	464,067	6,961	3.8E-02	5.2E-03	3.7E-02	5.1E-03
Trichlorobenzenes	0.37	18,197		7.0E-03	9.4E-04	7.0E-03	9.4E-04
Xylene isomers (total)	11.55	1,413		2.2E-01	2.9E-02	2.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	1.4E+01	1.4E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E+00	3.0E+00
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	1.6E+00	1.6E+00
Hexachlorobenzenes	1.5E-02	1.5E-02
Naphthalene	8.9E+01	8.9E+01
Phenanthrene	5.3E+00	5.3E+00
Phenol	4.1E-01	4.1E-01
Polychlorinated biphenyls	1.3E+00	1.3E+00
Pyrene	2.7E+00	2.7E+00
Toluene	1.8E+00	1.8E+00
Total mercury (methyl mercury for air emissions)	2.0E+00	2.0E+00
Trichlorobenzenes	3.7E-01	3.7E-01
Xylene isomers (total)	1.2E+01	1.2E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.80	1.8E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02
Benzo[a]pyrene	1.14	1.1E+02	1.9E-01	1.9E-01	5.2E-01	1.6E-01	1.5E-01
Chlorobenzene	14.29	1.4E+03	8.5E+02	8.4E+02	8.2E+02	8.5E+02	8.4E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	3.0E+02	6.9E+01	6.9E+01	6.7E+01	6.9E+01	6.9E+01
Ethylbenzene	1.03	1.0E+02	5.7E+01	5.6E+01	5.5E+01	5.7E+01	5.6E+01
Fluorene	1.57	1.6E+02	7.0E+00	7.0E+00	7.2E+00	6.9E+00	6.8E+00
Hexachlorobenzenes	0.02	1.5E+00	2.2E-03	2.2E-03	6.7E-03	1.8E-03	1.8E-03
Naphthalene	88.57	8.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03
Phenanthrene	5.33	5.3E+02	1.6E+00	1.6E+00	3.2E+00	1.4E+00	1.4E+00
Phenol	0.41	4.1E+01	3.7E+01	3.7E+01	3.6E+01	3.7E+01	3.7E+01
Polychlorinated biphenyls	1.33	1.3E+02	2.0E-01	2.0E-01	5.9E-01	1.7E-01	1.7E-01
Pyrene	2.69	2.7E+02	1.2E+00	1.2E+00	1.9E+00	1.0E+00	1.0E+00
Toluene	1.76	1.8E+02	1.1E+02	1.0E+02	1.0E+02	1.1E+02	1.0E+02
Total mercury (methyl mercury for air emissions)	2.03	2.0E+02	5.1E-01	5.1E-01	1.1E+00	4.3E-01	4.3E-01
Trichlorobenzenes	0.37	3.7E+01	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Xylene isomers (total)	11.55	1.2E+03	3.9E+02	3.8E+02	3.7E+02	3.8E+02	3.8E+02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		214		7		5		5	
Benzene	1.80	0.347	0.347	0.268	0.268	0.268	0.268	0.006	0.006
Benzo[a]pyrene	1.14	0.003	0.002	0.003	0.003	0.003	0.000	0.003	0.000
Chlorobenzene	14.29	1.824	1.821	1.824	1.823	1.824	1.824	0.039	0.039
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	0.154	0.153	0.093	0.093	0.088	0.088	0.008	0.008
Ethylbenzene	1.03	0.122	0.122	0.022	0.022	0.021	0.021	0.008	0.008
Fluorene	1.57	0.019	0.018	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	88.57	4.524	4.491	2.890	2.890	2.890	2.890	0.527	0.527
Phenanthrene	5.33	0.017	0.012	0.017	0.017	0.014	0.014	0.014	0.014
Phenol	0.41	0.080	0.080	0.051	0.051	0.036	0.036	0.010	0.010
Polychlorinated biphenyls	1.33	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	2.69	0.009	0.007	0.009	0.009	0.007	0.007	0.007	0.007
Toluene	1.76	0.226	0.226	0.164	0.164	0.151	0.151	0.004	0.004
Total mercury (methyl mercury for air emissions)	2.03	0.006	0.004	0.006	0.006	0.006	0.006	0.005	0.005
Trichlorobenzenes	0.37	0.004	0.004	0.003	0.003	0.003	0.003	0.001	0.001
Xylene isomers (total)	11.55	0.840	0.836	0.832	0.831	0.832	0.832	0.034	0.034

SMU (Insert Value: 1 through 7): 3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F4
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10.8
Total dredge volume in cy: 75,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 500

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 28%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.1E-03	3.9E-02	5.1E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.6E-05	5.9E-04	7.6E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.1E-06	6.8E-05	9.1E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.3E-04	4.9E-03	6.3E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	8.0E-04	6.0E-03	8.0E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.5E-04	6.6E-03	8.5E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative F4, SMU 3
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		207		7		5		5	
Benzene	1.77	0.343	0.343	0.265	0.265	0.265	0.265	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.016	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.043	0.043	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.027	0.027	0.026	0.026	0.026	0.026	0.001	0.001

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				55	5		
Benzene	0.01	100		3.1E-04	2.8E-05	3.1E-04	2.8E-05
Benzo[a]pyrene	0.08	1,096,478		4.4E-03	4.0E-04	4.0E-03	3.9E-04
Chlorobenzene	0.01	500		3.5E-04	3.2E-05	3.5E-04	3.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2,399		1.5E-03	1.4E-04	1.5E-03	1.4E-04
Ethylbenzene	0.01	588		6.6E-04	5.9E-05	6.6E-04	5.9E-05
Fluorene	0.03	15,136		1.8E-03	1.6E-04	1.7E-03	1.6E-04
Hexachlorobenzenes	0.11	1,513,561		6.0E-03	5.4E-04	5.4E-03	5.4E-04
Naphthalene	0.07	2,344		4.1E-03	3.7E-04	4.1E-03	3.7E-04
Phenanthrene	0.08	342,748		4.6E-03	4.1E-04	4.2E-03	4.1E-04
Phenol	0.08	100		4.5E-03	4.1E-04	4.5E-03	4.1E-04
Polychlorinated biphenyls	0.37	1,380,384		2.0E-02	1.8E-03	1.8E-02	1.8E-03
Pyrene	0.19	208,930		1.0E-02	9.3E-04	9.5E-03	9.2E-04
Toluene	0.00	490		2.7E-04	2.4E-05	2.7E-04	2.4E-05
Total mercury (methyl mercury for air emissions)	7.46	497,214	6,961	4.1E-01	3.7E-02	3.8E-01	3.7E-02
Trichlorobenzenes	0.02	18,197		9.4E-04	8.5E-05	9.2E-04	8.5E-05
Xylene isomers (total)	0.09	1,413		4.9E-03	4.4E-04	4.9E-03	4.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.5E-03	5.5E-03
Benzo[a]pyrene	8.0E-02	8.0E-02
Chlorobenzene	6.3E-03	6.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.7E-02	2.7E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	7.5E-02	7.5E-02
Phenanthrene	8.3E-02	8.3E-02
Phenol	8.1E-02	8.1E-02
Polychlorinated biphenyls	3.7E-01	3.7E-01
Pyrene	1.9E-01	1.9E-01
Toluene	4.9E-03	4.9E-03
Total mercury (methyl mercury for air emissions)	7.5E+00	7.5E+00
Trichlorobenzenes	1.7E-02	1.7E-02
Xylene isomers (total)	8.9E-02	8.9E-02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

		Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
Analyte	Average concentration of dredged material in mg/kg	Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.01	5.5E-01	5.1E-01	5.0E-01	4.9E-01	5.1E-01	5.0E-01
Benzo[a]pyrene	0.08	8.0E+00	1.9E-02	1.9E-02	3.9E-02	1.6E-02	1.6E-02
Chlorobenzene	0.01	6.3E-01	3.9E-01	3.8E-01	3.7E-01	3.9E-01	3.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2.7E+00	6.5E-01	6.5E-01	6.3E-01	6.5E-01	6.5E-01
Ethylbenzene	0.01	1.2E+00	6.8E-01	6.7E-01	6.5E-01	6.8E-01	6.7E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.4E-02	2.3E-02	5.1E-02	2.0E-02	1.9E-02
Naphthalene	0.07	7.5E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Phenanthrene	0.08	8.3E+00	3.2E-02	3.1E-02	5.2E-02	2.8E-02	2.7E-02
Phenol	0.08	8.1E+00	7.4E+00	7.4E+00	7.1E+00	7.4E+00	7.4E+00
Polychlorinated biphenyls	0.37	3.7E+01	8.3E-02	8.3E-02	1.8E-01	6.9E-02	6.9E-02
Pyrene	0.19	1.9E+01	9.7E-02	9.6E-02	1.4E-01	8.6E-02	8.5E-02
Toluene	0.00	4.9E-01	3.0E-01	3.0E-01	2.9E-01	3.0E-01	3.0E-01
Total mercury (methyl mercury for air emissions)	7.46	7.5E+02	2.4E+00	2.4E+00	4.2E+00	2.0E+00	2.0E+00
Trichlorobenzenes	0.02	1.7E+00	6.9E-02	6.8E-02	7.1E-02	6.8E-02	6.7E-02
Xylene isomers (total)	0.09	8.9E+00	3.1E+00	3.1E+00	3.0E+00	3.1E+00	3.0E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F4
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 22
Total dredge volume in cy: 135,000
Dredge cut in feet (either average or to max conc): 3.8
Post-dredge water depth (either average or to max conc.) in feet: 6.4

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 900

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 58%
Specific gravity: 2.6
TOC: 1.4%
In Situ Sediment Density (% solids by weight) 50%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		337		12		8		8	
Benzene	0.01	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.01	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	0.07	0.006	0.006	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.08	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.08	0.025	0.025	0.016	0.016	0.011	0.011	0.003	0.003
Polychlorinated biphenyls	0.37	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Pyrene	0.19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	7.46	0.045	0.028	0.040	0.040	0.040	0.040	0.039	0.039
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.09	0.011	0.011	0.011	0.011	0.011	0.011	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide F4
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 24
Total dredge volume in cy: 140,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 12.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 933

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 6%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 53%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 197 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 797,231

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				31	3		
Benzene	0.00	100		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	2.8E-04	3.1E-03	2.8E-04
Chlorobenzene	0.00	500		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	1.0E-04	1.2E-03	1.0E-04
Ethylbenzene	0.00	588		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Fluorene	0.05	15,136		1.7E-03	1.4E-04	1.6E-03	1.4E-04
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	2.0E-05	2.2E-04	2.0E-05
Naphthalene	0.14	2,344		4.2E-03	3.7E-04	4.2E-03	3.7E-04
Phenanthrene	0.14	342,748		4.4E-03	3.8E-04	4.2E-03	3.8E-04
Phenol	0.02	100		5.3E-04	4.6E-05	5.3E-04	4.6E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	6.7E-04	7.3E-03	6.6E-04
Pyrene	0.21	208,930		6.5E-03	5.6E-04	6.3E-03	5.6E-04
Toluene	0.02	490		6.5E-04	5.6E-05	6.5E-04	5.6E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	2.0E-03	2.2E-02	2.0E-03
Trichlorobenzenes	0.02	18,197		6.9E-04	6.0E-05	6.9E-04	6.0E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	1.0E-05	1.2E-04	1.0E-05

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.6E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.6E-01	2.6E-01	2.7E-01	2.6E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.5E-01	2.4E-01	2.5E-01	2.5E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.2E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.1E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.7E-01	1.3E-01	2.5E-01	2.5E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	3.8E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.1E-01
Toluene	0.02	2.1E+00	1.5E+00	1.5E+00	1.4E+00	1.5E+00	1.5E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.2E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		167		6		4		4	
Benzene	0.00	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.008	0.007	0.005	0.005	0.005	0.005	0.001	0.001
Phenanthrene	0.14	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.02	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.02	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				39	3		
Benzene	0.13	100		5.0E-03	3.7E-04	5.0E-03	3.7E-04
Benzo[a]pyrene	1.75	1,096,478		6.8E-02	5.1E-03	6.2E-02	5.0E-03
Chlorobenzene	0.49	500		1.9E-02	1.4E-03	1.9E-02	1.4E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	2,399		2.5E-02	1.8E-03	2.5E-02	1.8E-03
Ethylbenzene	0.22	588		8.4E-03	6.2E-04	8.4E-03	6.2E-04
Fluorene	1.35	15,136		5.3E-02	3.9E-03	5.3E-02	3.9E-03
Hexachlorobenzenes	0.03	1,513,561		1.3E-03	9.6E-05	1.2E-03	9.5E-05
Naphthalene	2.93	2,344		1.2E-01	8.5E-03	1.1E-01	8.5E-03
Phenanthrene	5.18	342,748		2.0E-01	1.5E-02	1.9E-01	1.5E-02
Phenol	0.06	100		2.2E-03	1.6E-04	2.2E-03	1.6E-04
Polychlorinated biphenyls	1.19	1,380,384		4.7E-02	3.4E-03	4.2E-02	3.4E-03
Pyrene	3.63	208,930		1.4E-01	1.1E-02	1.3E-01	1.0E-02
Toluene	0.11	490		4.1E-03	3.1E-04	4.1E-03	3.1E-04
Total mercury (methyl mercury for air emissions)	2.86	366,368	6,961	1.1E-01	8.3E-03	1.0E-01	8.3E-03
Trichlorobenzenes	0.53	18,197		2.1E-02	1.5E-03	2.1E-02	1.5E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	9.4E-04	1.3E-02	9.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.3E-01	1.3E-01
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	4.9E-01	4.9E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.3E-01	6.3E-01
Ethylbenzene	2.2E-01	2.2E-01
Fluorene	1.4E+00	1.4E+00
Hexachlorobenzenes	3.3E-02	3.3E-02
Naphthalene	2.9E+00	2.9E+00
Phenanthrene	5.2E+00	5.2E+00
Phenol	5.5E-02	5.5E-02
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	3.6E+00	3.6E+00
Toluene	1.1E-01	1.1E-01
Total mercury (methyl mercury for air emissions)	2.9E+00	2.9E+00
Trichlorobenzenes	5.3E-01	5.3E-01
Xylene isomers (total)	3.2E-01	3.2E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.13	1.3E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01
Benzo[a]pyrene	1.75	1.7E+02	5.2E-01	5.2E-01	6.3E-01	4.1E-01	4.1E-01
Chlorobenzene	0.49	4.9E+01	2.6E+01	2.6E+01	2.5E+01	2.6E+01	2.6E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	6.3E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01
Ethylbenzene	0.22	2.2E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Fluorene	1.35	1.4E+02	5.0E+00	5.0E+00	4.9E+00	4.9E+00	4.8E+00
Hexachlorobenzenes	0.03	3.3E+00	9.4E-03	9.3E-03	1.2E-02	7.3E-03	7.2E-03
Naphthalene	2.93	2.9E+02	5.6E+01	5.6E+01	5.4E+01	5.6E+01	5.5E+01
Phenanthrene	5.18	5.2E+02	2.1E+00	2.1E+00	2.4E+00	1.7E+00	1.7E+00
Phenol	0.06	5.5E+00	4.8E+00	4.8E+00	4.6E+00	4.8E+00	4.8E+00
Polychlorinated biphenyls	1.19	1.2E+02	3.4E-01	3.4E-01	4.2E-01	2.7E-01	2.7E-01
Pyrene	3.63	3.6E+02	1.8E+00	1.8E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.11	1.1E+01	5.7E+00	5.6E+00	5.5E+00	5.7E+00	5.6E+00
Total mercury (methyl mercury for air emissions)	2.86	2.9E+02	1.1E+00	1.1E+00	1.3E+00	9.4E-01	9.4E-01
Trichlorobenzenes	0.53	5.3E+01	1.7E+00	1.7E+00	1.7E+00	1.6E+00	1.6E+00
Xylene isomers (total)	0.32	3.2E+01	9.2E+00	9.0E+00	8.8E+00	9.2E+00	9.0E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		208		7		5		5	
Benzene	0.13	0.023	0.023	0.018	0.018	0.018	0.018	0.000	0.000
Benzo[a]pyrene	1.75	0.006	0.004	0.006	0.006	0.006	0.000	0.006	0.000
Chlorobenzene	0.49	0.054	0.054	0.054	0.054	0.054	0.054	0.001	0.001
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	0.026	0.026	0.016	0.016	0.015	0.015	0.002	0.002
Ethylbenzene	0.22	0.022	0.022	0.004	0.004	0.004	0.004	0.002	0.002
Fluorene	1.35	0.014	0.013	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.93	0.123	0.122	0.079	0.079	0.079	0.079	0.017	0.017
Phenanthrene	5.18	0.019	0.013	0.019	0.019	0.016	0.016	0.015	0.015
Phenol	0.06	0.010	0.010	0.006	0.006	0.005	0.005	0.001	0.001
Polychlorinated biphenyls	1.19	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	3.63	0.014	0.010	0.014	0.014	0.011	0.011	0.011	0.011
Toluene	0.11	0.012	0.012	0.009	0.009	0.008	0.008	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.86	0.011	0.007	0.009	0.009	0.009	0.009	0.009	0.009
Trichlorobenzenes	0.53	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002
Xylene isomers (total)	0.32	0.020	0.019	0.019	0.019	0.019	0.019	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative F4, SMU 7
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				38	4		
Benzene	1.21	100		4.6E-02	5.4E-03	4.6E-02	5.4E-03
Benzo[a]pyrene	1.75	1,096,478		6.7E-02	7.8E-03	6.1E-02	7.7E-03
Chlorobenzene	12.91	500		4.9E-01	5.7E-02	4.9E-01	5.7E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	2,399		2.1E+00	2.5E-01	2.1E+00	2.5E-01
Ethylbenzene	1.01	588		3.9E-02	4.5E-03	3.9E-02	4.5E-03
Fluorene	6.30	15,136		2.4E-01	2.8E-02	2.4E-01	2.8E-02
Hexachlorobenzenes	0.97	1,513,561		3.7E-02	4.3E-03	3.4E-02	4.2E-03
Naphthalene	26.93	2,344		1.0E+00	1.2E-01	1.0E+00	1.2E-01
Phenanthrene	6.03	342,748		2.3E-01	2.7E-02	2.1E-01	2.7E-02
Phenol	0.09	100		3.6E-03	4.2E-04	3.6E-03	4.2E-04
Polychlorinated biphenyls	1.67	1,380,384		6.4E-02	7.4E-03	5.8E-02	7.3E-03
Pyrene	3.98	208,930		1.5E-01	1.8E-02	1.4E-01	1.8E-02
Toluene	2.57	490		9.8E-02	1.1E-02	9.8E-02	1.1E-02
Total mercury (methyl mercury for air emissions)	20.54	409,471	6,961	7.9E-01	9.1E-02	7.3E-01	9.0E-02
Trichlorobenzenes	9.26	18,197		3.5E-01	4.1E-02	3.5E-01	4.1E-02
Xylene isomers (total)	9.94	1,413		3.8E-01	4.4E-02	3.8E-01	4.4E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	5.6E+01	5.6E+01
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	6.3E+00	6.3E+00
Hexachlorobenzenes	9.7E-01	9.7E-01
Naphthalene	2.7E+01	2.7E+01
Phenanthrene	6.0E+00	6.0E+00
Phenol	9.5E-02	9.5E-02
Polychlorinated biphenyls	1.7E+00	1.7E+00
Pyrene	4.0E+00	4.0E+00
Toluene	2.6E+00	2.6E+00
Total mercury (methyl mercury for air emissions)	2.1E+01	2.1E+01
Trichlorobenzenes	9.3E+00	9.3E+00
Xylene isomers (total)	9.9E+00	9.9E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative F4, SMU 7
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.21	1.2E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	1.75	1.7E+02	4.5E-01	4.5E-01	7.1E-01	3.6E-01	3.6E-01
Chlorobenzene	12.91	1.3E+03	7.3E+02	7.2E+02	7.0E+02	7.3E+02	7.2E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	5.6E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	1.01	1.0E+02	5.3E+01	5.2E+01	5.1E+01	5.3E+01	5.2E+01
Fluorene	6.30	6.3E+02	2.6E+01	2.6E+01	2.6E+01	2.5E+01	2.5E+01
Hexachlorobenzenes	0.97	9.7E+01	2.4E-01	2.3E-01	3.8E-01	1.9E-01	1.9E-01
Naphthalene	26.93	2.7E+03	5.7E+02	5.6E+02	5.5E+02	5.6E+02	5.6E+02
Phenanthrene	6.03	6.0E+02	2.3E+00	2.3E+00	3.1E+00	1.9E+00	1.9E+00
Phenol	0.09	9.5E+00	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Polychlorinated biphenyls	1.67	1.7E+02	4.1E-01	4.1E-01	6.6E-01	3.3E-01	3.3E-01
Pyrene	3.98	4.0E+02	2.0E+00	2.0E+00	2.5E+00	1.7E+00	1.7E+00
Toluene	2.57	2.6E+02	1.5E+02	1.4E+02	1.4E+02	1.5E+02	1.4E+02
Total mercury (methyl mercury for air emissions)	20.54	2.1E+03	7.2E+00	7.2E+00	1.0E+01	6.0E+00	6.0E+00
Trichlorobenzenes	9.26	9.3E+02	3.2E+01	3.2E+01	3.2E+01	3.1E+01	3.1E+01
Xylene isomers (total)	9.94	9.9E+02	3.1E+02	3.0E+02	2.9E+02	3.1E+02	3.0E+02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative F4, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide F4
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	197	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	797,231	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		378		12		8		8	
Benzene	1.21	0.405	0.405	0.313	0.313	0.313	0.313	0.007	0.007
Benzo[a]pyrene	1.75	0.009	0.005	0.009	0.009	0.009	0.000	0.009	0.000
Chlorobenzene	12.91	2.766	2.757	2.766	2.766	2.766	2.766	0.061	0.061
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	4.564	4.495	2.765	2.764	2.622	2.622	0.264	0.264
Ethylbenzene	1.01	0.201	0.200	0.036	0.036	0.034	0.034	0.013	0.013
Fluorene	6.30	0.124	0.114	0.029	0.029	0.029	0.029	0.028	0.028
Hexachlorobenzenes	0.97	0.005	0.003	0.005	0.005	0.005	0.005	0.005	0.005
Naphthalene	26.93	2.228	2.195	1.426	1.426	1.426	1.426	0.267	0.267
Phenanthrene	6.03	0.035	0.020	0.035	0.034	0.028	0.028	0.027	0.027
Phenol	0.09	0.032	0.032	0.020	0.020	0.014	0.014	0.004	0.004
Polychlorinated biphenyls	1.67	0.009	0.005	0.009	0.008	0.009	0.009	0.009	0.009
Pyrene	3.98	0.025	0.016	0.025	0.024	0.018	0.018	0.018	0.018
Toluene	2.57	0.555	0.554	0.403	0.403	0.372	0.372	0.011	0.011
Total mercury (methyl mercury for air emissions)	20.54	0.117	0.067	0.102	0.099	0.100	0.100	0.096	0.096
Trichlorobenzenes	9.26	0.160	0.145	0.140	0.139	0.104	0.104	0.058	0.058
Xylene isomers (total)	9.94	1.181	1.170	1.169	1.169	1.169	1.169	0.050	0.050

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,637,000
Dredge cut in feet (either average or to max conc):	19.5
Post-dredge water depth (either average or to max conc.) in feet:	26.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,580
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				10	0		
Benzene	3.68	100		3.7E-02	1.7E-03	3.7E-02	1.7E-03
Benzo[a]pyrene	0.86	1,096,478		8.6E-03	4.0E-04	8.3E-03	4.0E-04
Chlorobenzene	13.30	500		1.3E-01	6.1E-03	1.3E-01	6.1E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	23.70	2,399		2.4E-01	1.1E-02	2.4E-01	1.1E-02
Ethylbenzene	4.37	588		4.3E-02	2.0E-03	4.3E-02	2.0E-03
Fluorene	5.79	15,136		5.8E-02	2.7E-03	5.7E-02	2.7E-03
Hexachlorobenzenes	0.16	1,513,561		1.6E-03	7.6E-05	1.6E-03	7.6E-05
Naphthalene	98.87	2,344		9.8E-01	4.6E-02	9.8E-01	4.6E-02
Phenanthrene	7.78	342,748		7.7E-02	3.6E-03	7.6E-02	3.6E-03
Phenol	3.58	100		3.6E-02	1.7E-03	3.6E-02	1.7E-03
Polychlorinated biphenyls	0.78	1,380,384		7.8E-03	3.6E-04	7.6E-03	3.6E-04
Pyrene	2.96	208,930		2.9E-02	1.4E-03	2.9E-02	1.4E-03
Toluene	9.52	490		9.5E-02	4.4E-03	9.5E-02	4.4E-03
Total mercury (methyl mercury for air emissions)	10.55	348,050	6,961	1.1E-01	4.9E-03	1.0E-01	4.9E-03
Trichlorobenzenes	6.61	18,197		6.6E-02	3.0E-03	6.6E-02	3.0E-03
Xylene isomers (total)	62.04	1,413		6.2E-01	2.9E-02	6.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,637,000
Dredge cut in feet (either average or to max conc):	19.5
Post-dredge water depth (either average or to max conc.) in feet:	26.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,580
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.7E+00	3.7E+00
Benzo[a]pyrene	8.6E-01	8.6E-01
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.4E+01	2.4E+01
Ethylbenzene	4.4E+00	4.4E+00
Fluorene	5.8E+00	5.8E+00
Hexachlorobenzenes	1.6E-01	1.6E-01
Naphthalene	9.9E+01	9.9E+01
Phenanthrene	7.8E+00	7.8E+00
Phenol	3.6E+00	3.6E+00
Polychlorinated biphenyls	7.8E-01	7.8E-01
Pyrene	3.0E+00	3.0E+00
Toluene	9.5E+00	9.5E+00
Total mercury (methyl mercury for air emissions)	1.1E+01	1.1E+01
Trichlorobenzenes	6.6E+00	6.6E+00
Xylene isomers (total)	6.2E+01	6.2E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,637,000
Dredge cut in feet (either average or to max conc):	19.5
Post-dredge water depth (either average or to max conc.) in feet:	26.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,580
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	3.68	3.7E+02	3.2E+02	3.1E+02	3.1E+02	3.2E+02	3.1E+02
Benzo[a]pyrene	0.86	8.6E+01	1.3E-01	1.3E-01	3.0E-01	1.0E-01	1.0E-01
Chlorobenzene	13.30	1.3E+03	6.9E+02	6.8E+02	6.7E+02	6.9E+02	6.8E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	23.70	2.4E+03	4.3E+02	4.2E+02	4.1E+02	4.3E+02	4.2E+02
Ethylbenzene	4.37	4.4E+02	2.1E+02	2.0E+02	2.0E+02	2.1E+02	2.0E+02
Fluorene	5.79	5.8E+02	2.0E+01	1.9E+01	2.0E+01	1.9E+01	1.9E+01
Hexachlorobenzenes	0.16	1.6E+01	2.3E-02	2.3E-02	5.4E-02	1.8E-02	1.7E-02
Naphthalene	98.87	9.9E+03	1.8E+03	1.8E+03	1.8E+03	1.8E+03	1.8E+03
Phenanthrene	7.78	7.8E+02	2.0E+00	2.0E+00	3.5E+00	1.7E+00	1.6E+00
Phenol	3.58	3.6E+02	3.1E+02	3.1E+02	3.0E+02	3.1E+02	3.1E+02
Polychlorinated biphenyls	0.78	7.8E+01	1.1E-01	1.1E-01	2.6E-01	8.8E-02	8.8E-02
Pyrene	2.96	3.0E+02	1.1E+00	1.0E+00	1.6E+00	8.9E-01	8.8E-01
Toluene	9.52	9.5E+02	5.0E+02	4.9E+02	4.8E+02	5.0E+02	4.9E+02
Total mercury (methyl mercury for air emissions)	10.55	1.1E+03	2.7E+00	2.7E+00	4.7E+00	2.2E+00	2.2E+00
Trichlorobenzenes	6.61	6.6E+02	1.9E+01	1.9E+01	2.0E+01	1.8E+01	1.8E+01
Xylene isomers (total)	62.04	6.2E+03	1.7E+03	1.6E+03	1.6E+03	1.7E+03	1.6E+03

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,637,000
Dredge cut in feet (either average or to max conc):	19.5
Post-dredge water depth (either average or to max conc.) in feet:	26.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,580
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		42		1		1		1	
Benzene	3.68	0.132	0.132	0.102	0.102	0.102	0.102	0.002	0.002
Benzo[a]pyrene	0.86	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	13.30	0.288	0.288	0.288	0.288	0.288	0.288	0.007	0.007
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	23.70	0.187	0.187	0.114	0.114	0.108	0.108	0.012	0.012
Ethylbenzene	4.37	0.087	0.087	0.016	0.016	0.015	0.015	0.006	0.006
Fluorene	5.79	0.011	0.011	0.003	0.003	0.003	0.003	0.003	0.003
Hexachlorobenzenes	0.16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	98.87	0.786	0.785	0.505	0.505	0.505	0.505	0.098	0.098
Phenanthrene	7.78	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Phenol	3.58	0.131	0.131	0.083	0.083	0.059	0.059	0.017	0.017
Polychlorinated biphenyls	0.78	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	2.96	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
Toluene	9.52	0.208	0.208	0.151	0.151	0.139	0.139	0.004	0.004
Total mercury (methyl mercury for air emissions)	10.55	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Trichlorobenzenes	6.61	0.011	0.011	0.010	0.010	0.007	0.007	0.004	0.004
Xylene isomers (total)	62.04	0.717	0.716	0.710	0.710	0.710	0.710	0.032	0.032

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				19	3		
Benzene	1.80	100		3.4E-02	4.6E-03	3.4E-02	4.6E-03
Benzo[a]pyrene	1.14	1,096,478		2.2E-02	2.9E-03	2.1E-02	2.9E-03
Chlorobenzene	14.29	500		2.7E-01	3.6E-02	2.7E-01	3.6E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	2,399		5.8E-02	7.8E-03	5.8E-02	7.8E-03
Ethylbenzene	1.03	588		1.9E-02	2.6E-03	1.9E-02	2.6E-03
Fluorene	1.57	15,136		3.0E-02	4.0E-03	3.0E-02	4.0E-03
Hexachlorobenzenes	0.02	1,513,561		2.9E-04	3.8E-05	2.7E-04	3.8E-05
Naphthalene	88.57	2,344		1.7E+00	2.3E-01	1.7E+00	2.3E-01
Phenanthrene	5.33	342,748		1.0E-01	1.4E-02	9.8E-02	1.4E-02
Phenol	0.41	100		7.8E-03	1.0E-03	7.8E-03	1.0E-03
Polychlorinated biphenyls	1.33	1,380,384		2.5E-02	3.4E-03	2.4E-02	3.4E-03
Pyrene	2.69	208,930		5.1E-02	6.8E-03	5.0E-02	6.8E-03
Toluene	1.76	490		3.3E-02	4.5E-03	3.3E-02	4.5E-03
Total mercury (methyl mercury for air emissions)	2.03	464,067	6,961	3.8E-02	5.2E-03	3.7E-02	5.1E-03
Trichlorobenzenes	0.37	18,197		7.0E-03	9.4E-04	7.0E-03	9.4E-04
Xylene isomers (total)	11.55	1,413		2.2E-01	2.9E-02	2.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	1.1E+00	1.1E+00
Chlorobenzene	1.4E+01	1.4E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E+00	3.0E+00
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	1.6E+00	1.6E+00
Hexachlorobenzenes	1.5E-02	1.5E-02
Naphthalene	8.9E+01	8.9E+01
Phenanthrene	5.3E+00	5.3E+00
Phenol	4.1E-01	4.1E-01
Polychlorinated biphenyls	1.3E+00	1.3E+00
Pyrene	2.7E+00	2.7E+00
Toluene	1.8E+00	1.8E+00
Total mercury (methyl mercury for air emissions)	2.0E+00	2.0E+00
Trichlorobenzenes	3.7E-01	3.7E-01
Xylene isomers (total)	1.2E+01	1.2E+01

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.80	1.8E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02	1.6E+02
Benzo[a]pyrene	1.14	1.1E+02	1.9E-01	1.9E-01	5.2E-01	1.6E-01	1.5E-01
Chlorobenzene	14.29	1.4E+03	8.5E+02	8.4E+02	8.2E+02	8.5E+02	8.4E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	3.0E+02	6.9E+01	6.9E+01	6.7E+01	6.9E+01	6.9E+01
Ethylbenzene	1.03	1.0E+02	5.7E+01	5.6E+01	5.5E+01	5.7E+01	5.6E+01
Fluorene	1.57	1.6E+02	7.0E+00	7.0E+00	7.2E+00	6.9E+00	6.8E+00
Hexachlorobenzenes	0.02	1.5E+00	2.2E-03	2.2E-03	6.7E-03	1.8E-03	1.8E-03
Naphthalene	88.57	8.9E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03
Phenanthrene	5.33	5.3E+02	1.6E+00	1.6E+00	3.2E+00	1.4E+00	1.4E+00
Phenol	0.41	4.1E+01	3.7E+01	3.7E+01	3.6E+01	3.7E+01	3.7E+01
Polychlorinated biphenyls	1.33	1.3E+02	2.0E-01	2.0E-01	5.9E-01	1.7E-01	1.7E-01
Pyrene	2.69	2.7E+02	1.2E+00	1.2E+00	1.9E+00	1.0E+00	1.0E+00
Toluene	1.76	1.8E+02	1.1E+02	1.0E+02	1.0E+02	1.1E+02	1.0E+02
Total mercury (methyl mercury for air emissions)	2.03	2.0E+02	5.1E-01	5.1E-01	1.1E+00	4.3E-01	4.3E-01
Trichlorobenzenes	0.37	3.7E+01	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Xylene isomers (total)	11.55	1.2E+03	3.9E+02	3.8E+02	3.7E+02	3.8E+02	3.8E+02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-4
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	169,000
Dredge cut in feet (either average or to max conc):	10.7
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,127
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		214		7		5		5	
Benzene	1.80	0.347	0.347	0.268	0.268	0.268	0.268	0.006	0.006
Benzo[a]pyrene	1.14	0.003	0.002	0.003	0.003	0.003	0.000	0.003	0.000
Chlorobenzene	14.29	1.824	1.821	1.824	1.823	1.824	1.824	0.039	0.039
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.05	0.154	0.153	0.093	0.093	0.088	0.088	0.008	0.008
Ethylbenzene	1.03	0.122	0.122	0.022	0.022	0.021	0.021	0.008	0.008
Fluorene	1.57	0.019	0.018	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	88.57	4.524	4.491	2.890	2.890	2.890	2.890	0.527	0.527
Phenanthrene	5.33	0.017	0.012	0.017	0.017	0.014	0.014	0.014	0.014
Phenol	0.41	0.080	0.080	0.051	0.051	0.036	0.036	0.010	0.010
Polychlorinated biphenyls	1.33	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	2.69	0.009	0.007	0.009	0.009	0.007	0.007	0.007	0.007
Toluene	1.76	0.226	0.226	0.164	0.164	0.151	0.151	0.004	0.004
Total mercury (methyl mercury for air emissions)	2.03	0.006	0.004	0.006	0.006	0.006	0.006	0.005	0.005
Trichlorobenzenes	0.37	0.004	0.004	0.003	0.003	0.003	0.003	0.001	0.001
Xylene isomers (total)	11.55	0.840	0.836	0.832	0.831	0.832	0.832	0.034	0.034

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.1E-03	3.9E-02	5.1E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.6E-05	5.9E-04	7.6E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.1E-06	6.8E-05	9.1E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.3E-04	4.9E-03	6.3E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	8.0E-04	6.0E-03	8.0E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.5E-04	6.6E-03	8.5E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

SMU (Insert Value: 1 through 7): 3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide G
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10.8
Total dredge volume in cy: 75,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 500

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 28%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 308 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,246,432

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		207		7		5		5	
Benzene	1.77	0.343	0.343	0.265	0.265	0.265	0.265	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.016	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.043	0.043	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.027	0.027	0.026	0.026	0.026	0.026	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide G
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 22
Total dredge volume in cy: 135,000
Dredge cut in feet (either average or to max conc): 3.8
Post-dredge water depth (either average or to max conc.) in feet: 6.4

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 900

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 58%
Specific gravity: 2.6
TOC: 1.4%
In Situ Sediment Density (% solids by weight) 50%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 308 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,246,432

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				55	5		
Benzene	0.01	100		3.1E-04	2.8E-05	3.1E-04	2.8E-05
Benzo[a]pyrene	0.08	1,096,478		4.4E-03	4.0E-04	4.0E-03	3.9E-04
Chlorobenzene	0.01	500		3.5E-04	3.2E-05	3.5E-04	3.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2,399		1.5E-03	1.4E-04	1.5E-03	1.4E-04
Ethylbenzene	0.01	588		6.6E-04	5.9E-05	6.6E-04	5.9E-05
Fluorene	0.03	15,136		1.8E-03	1.6E-04	1.7E-03	1.6E-04
Hexachlorobenzenes	0.11	1,513,561		6.0E-03	5.4E-04	5.4E-03	5.4E-04
Naphthalene	0.07	2,344		4.1E-03	3.7E-04	4.1E-03	3.7E-04
Phenanthrene	0.08	342,748		4.6E-03	4.1E-04	4.2E-03	4.1E-04
Phenol	0.08	100		4.5E-03	4.1E-04	4.5E-03	4.1E-04
Polychlorinated biphenyls	0.37	1,380,384		2.0E-02	1.8E-03	1.8E-02	1.8E-03
Pyrene	0.19	208,930		1.0E-02	9.3E-04	9.5E-03	9.2E-04
Toluene	0.00	490		2.7E-04	2.4E-05	2.7E-04	2.4E-05
Total mercury (methyl mercury for air emissions)	7.46	497,214	6,961	4.1E-01	3.7E-02	3.8E-01	3.7E-02
Trichlorobenzenes	0.02	18,197		9.4E-04	8.5E-05	9.2E-04	8.5E-05
Xylene isomers (total)	0.09	1,413		4.9E-03	4.4E-04	4.9E-03	4.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.5E-03	5.5E-03
Benzo[a]pyrene	8.0E-02	8.0E-02
Chlorobenzene	6.3E-03	6.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.7E-02	2.7E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	7.5E-02	7.5E-02
Phenanthrene	8.3E-02	8.3E-02
Phenol	8.1E-02	8.1E-02
Polychlorinated biphenyls	3.7E-01	3.7E-01
Pyrene	1.9E-01	1.9E-01
Toluene	4.9E-03	4.9E-03
Total mercury (methyl mercury for air emissions)	7.5E+00	7.5E+00
Trichlorobenzenes	1.7E-02	1.7E-02
Xylene isomers (total)	8.9E-02	8.9E-02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.01	5.5E-01	5.1E-01	5.0E-01	4.9E-01	5.1E-01	5.0E-01
Benzo[a]pyrene	0.08	8.0E+00	1.9E-02	1.9E-02	3.9E-02	1.6E-02	1.6E-02
Chlorobenzene	0.01	6.3E-01	3.9E-01	3.8E-01	3.7E-01	3.9E-01	3.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2.7E+00	6.5E-01	6.5E-01	6.3E-01	6.5E-01	6.5E-01
Ethylbenzene	0.01	1.2E+00	6.8E-01	6.7E-01	6.5E-01	6.8E-01	6.7E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.4E-02	2.3E-02	5.1E-02	2.0E-02	1.9E-02
Naphthalene	0.07	7.5E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Phenanthrene	0.08	8.3E+00	3.2E-02	3.1E-02	5.2E-02	2.8E-02	2.7E-02
Phenol	0.08	8.1E+00	7.4E+00	7.4E+00	7.1E+00	7.4E+00	7.4E+00
Polychlorinated biphenyls	0.37	3.7E+01	8.3E-02	8.3E-02	1.8E-01	6.9E-02	6.9E-02
Pyrene	0.19	1.9E+01	9.7E-02	9.6E-02	1.4E-01	8.6E-02	8.5E-02
Toluene	0.00	4.9E-01	3.0E-01	3.0E-01	2.9E-01	3.0E-01	3.0E-01
Total mercury (methyl mercury for air emissions)	7.46	7.5E+02	2.4E+00	2.4E+00	4.2E+00	2.0E+00	2.0E+00
Trichlorobenzenes	0.02	1.7E+00	6.9E-02	6.8E-02	7.1E-02	6.8E-02	6.7E-02
Xylene isomers (total)	0.09	8.9E+00	3.1E+00	3.1E+00	3.0E+00	3.1E+00	3.0E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide G
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 22
Total dredge volume in cy: 135,000
Dredge cut in feet (either average or to max conc): 3.8
Post-dredge water depth (either average or to max conc.) in feet: 6.4

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 900

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 58%
Specific gravity: 2.6
TOC: 1.4%
In Situ Sediment Density (% solids by weight) 50%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 308 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,246,432

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		337		12		8		8	
Benzene	0.01	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.01	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	0.07	0.006	0.006	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.08	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.08	0.025	0.025	0.016	0.016	0.011	0.011	0.003	0.003
Polychlorinated biphenyls	0.37	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Pyrene	0.19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	7.46	0.045	0.028	0.040	0.040	0.040	0.040	0.039	0.039
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.09	0.011	0.011	0.011	0.011	0.011	0.011	0.000	0.000

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				31	3		
Benzene	0.00	100		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	2.8E-04	3.1E-03	2.8E-04
Chlorobenzene	0.00	500		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	1.0E-04	1.2E-03	1.0E-04
Ethylbenzene	0.00	588		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Fluorene	0.05	15,136		1.7E-03	1.4E-04	1.6E-03	1.4E-04
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	2.0E-05	2.2E-04	2.0E-05
Naphthalene	0.14	2,344		4.2E-03	3.7E-04	4.2E-03	3.7E-04
Phenanthrene	0.14	342,748		4.4E-03	3.8E-04	4.2E-03	3.8E-04
Phenol	0.02	100		5.3E-04	4.6E-05	5.3E-04	4.6E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	6.7E-04	7.3E-03	6.6E-04
Pyrene	0.21	208,930		6.5E-03	5.6E-04	6.3E-03	5.6E-04
Toluene	0.02	490		6.5E-04	5.6E-05	6.5E-04	5.6E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	2.0E-03	2.2E-02	2.0E-03
Trichlorobenzenes	0.02	18,197		6.9E-04	6.0E-05	6.9E-04	6.0E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	1.0E-05	1.2E-04	1.0E-05

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.6E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.6E-01	2.6E-01	2.7E-01	2.6E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.5E-01	2.4E-01	2.5E-01	2.5E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.2E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.1E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.7E-01	1.3E-01	2.5E-01	2.5E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	3.8E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.1E-01
Toluene	0.02	2.1E+00	1.5E+00	1.5E+00	1.4E+00	1.5E+00	1.5E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.2E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		167		6		4		4	
Benzene	0.00	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.008	0.007	0.005	0.005	0.005	0.005	0.001	0.001
Phenanthrene	0.14	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.02	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.02	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				39	3		
Benzene	0.13	100		5.0E-03	3.7E-04	5.0E-03	3.7E-04
Benzo[a]pyrene	1.75	1,096,478		6.8E-02	5.1E-03	6.2E-02	5.0E-03
Chlorobenzene	0.49	500		1.9E-02	1.4E-03	1.9E-02	1.4E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	2,399		2.5E-02	1.8E-03	2.5E-02	1.8E-03
Ethylbenzene	0.22	588		8.4E-03	6.2E-04	8.4E-03	6.2E-04
Fluorene	1.35	15,136		5.3E-02	3.9E-03	5.3E-02	3.9E-03
Hexachlorobenzenes	0.03	1,513,561		1.3E-03	9.6E-05	1.2E-03	9.5E-05
Naphthalene	2.93	2,344		1.2E-01	8.5E-03	1.1E-01	8.5E-03
Phenanthrene	5.18	342,748		2.0E-01	1.5E-02	1.9E-01	1.5E-02
Phenol	0.06	100		2.2E-03	1.6E-04	2.2E-03	1.6E-04
Polychlorinated biphenyls	1.19	1,380,384		4.7E-02	3.4E-03	4.2E-02	3.4E-03
Pyrene	3.63	208,930		1.4E-01	1.1E-02	1.3E-01	1.0E-02
Toluene	0.11	490		4.1E-03	3.1E-04	4.1E-03	3.1E-04
Total mercury (methyl mercury for air emissions)	2.86	366,368	6,961	1.1E-01	8.3E-03	1.0E-01	8.3E-03
Trichlorobenzenes	0.53	18,197		2.1E-02	1.5E-03	2.1E-02	1.5E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	9.4E-04	1.3E-02	9.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.3E-01	1.3E-01
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	4.9E-01	4.9E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.3E-01	6.3E-01
Ethylbenzene	2.2E-01	2.2E-01
Fluorene	1.4E+00	1.4E+00
Hexachlorobenzenes	3.3E-02	3.3E-02
Naphthalene	2.9E+00	2.9E+00
Phenanthrene	5.2E+00	5.2E+00
Phenol	5.5E-02	5.5E-02
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	3.6E+00	3.6E+00
Toluene	1.1E-01	1.1E-01
Total mercury (methyl mercury for air emissions)	2.9E+00	2.9E+00
Trichlorobenzenes	5.3E-01	5.3E-01
Xylene isomers (total)	3.2E-01	3.2E-01

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.13	1.3E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01
Benzo[a]pyrene	1.75	1.7E+02	5.2E-01	5.2E-01	6.3E-01	4.1E-01	4.1E-01
Chlorobenzene	0.49	4.9E+01	2.6E+01	2.6E+01	2.5E+01	2.6E+01	2.6E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	6.3E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01
Ethylbenzene	0.22	2.2E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Fluorene	1.35	1.4E+02	5.0E+00	5.0E+00	4.9E+00	4.9E+00	4.8E+00
Hexachlorobenzenes	0.03	3.3E+00	9.4E-03	9.3E-03	1.2E-02	7.3E-03	7.2E-03
Naphthalene	2.93	2.9E+02	5.6E+01	5.6E+01	5.4E+01	5.6E+01	5.5E+01
Phenanthrene	5.18	5.2E+02	2.1E+00	2.1E+00	2.4E+00	1.7E+00	1.7E+00
Phenol	0.06	5.5E+00	4.8E+00	4.8E+00	4.6E+00	4.8E+00	4.8E+00
Polychlorinated biphenyls	1.19	1.2E+02	3.4E-01	3.4E-01	4.2E-01	2.7E-01	2.7E-01
Pyrene	3.63	3.6E+02	1.8E+00	1.8E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.11	1.1E+01	5.7E+00	5.6E+00	5.5E+00	5.7E+00	5.6E+00
Total mercury (methyl mercury for air emissions)	2.86	2.9E+02	1.1E+00	1.1E+00	1.3E+00	9.4E-01	9.4E-01
Trichlorobenzenes	0.53	5.3E+01	1.7E+00	1.7E+00	1.7E+00	1.6E+00	1.6E+00
Xylene isomers (total)	0.32	3.2E+01	9.2E+00	9.0E+00	8.8E+00	9.2E+00	9.0E+00

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		208		7		5		5	
Benzene	0.13	0.023	0.023	0.018	0.018	0.018	0.018	0.000	0.000
Benzo[a]pyrene	1.75	0.006	0.004	0.006	0.006	0.006	0.000	0.006	0.000
Chlorobenzene	0.49	0.054	0.054	0.054	0.054	0.054	0.054	0.001	0.001
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	0.026	0.026	0.016	0.016	0.015	0.015	0.002	0.002
Ethylbenzene	0.22	0.022	0.022	0.004	0.004	0.004	0.004	0.002	0.002
Fluorene	1.35	0.014	0.013	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.93	0.123	0.122	0.079	0.079	0.079	0.079	0.017	0.017
Phenanthrene	5.18	0.019	0.013	0.019	0.019	0.016	0.016	0.015	0.015
Phenol	0.06	0.010	0.010	0.006	0.006	0.005	0.005	0.001	0.001
Polychlorinated biphenyls	1.19	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	3.63	0.014	0.010	0.014	0.014	0.011	0.011	0.011	0.011
Toluene	0.11	0.012	0.012	0.009	0.009	0.008	0.008	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.86	0.011	0.007	0.009	0.009	0.009	0.009	0.009	0.009
Trichlorobenzenes	0.53	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002
Xylene isomers (total)	0.32	0.020	0.019	0.019	0.019	0.019	0.019	0.001	0.001

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide G
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 13
Total dredge volume in cy: 89,000
Dredge cut in feet (either average or to max conc): 4.1
Post-dredge water depth (either average or to max conc.) in feet: 7.3

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 593

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 308 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,246,432

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				38	4		
Benzene	1.21	100		4.6E-02	5.4E-03	4.6E-02	5.4E-03
Benzo[a]pyrene	1.75	1,096,478		6.7E-02	7.9E-03	6.1E-02	7.8E-03
Chlorobenzene	12.91	500		4.9E-01	5.8E-02	4.9E-01	5.8E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	2,399		2.1E+00	2.5E-01	2.1E+00	2.5E-01
Ethylbenzene	1.01	588		3.9E-02	4.6E-03	3.9E-02	4.6E-03
Fluorene	6.30	15,136		2.4E-01	2.8E-02	2.4E-01	2.8E-02
Hexachlorobenzenes	0.97	1,513,561		3.7E-02	4.4E-03	3.4E-02	4.3E-03
Naphthalene	26.93	2,344		1.0E+00	1.2E-01	1.0E+00	1.2E-01
Phenanthrene	6.03	342,748		2.3E-01	2.7E-02	2.1E-01	2.7E-02
Phenol	0.09	100		3.6E-03	4.3E-04	3.6E-03	4.3E-04
Polychlorinated biphenyls	1.67	1,380,384		6.4E-02	7.5E-03	5.8E-02	7.4E-03
Pyrene	3.98	208,930		1.5E-01	1.8E-02	1.4E-01	1.8E-02
Toluene	2.57	490		9.8E-02	1.2E-02	9.8E-02	1.2E-02
Total mercury (methyl mercury for air emissions)	20.54	409,471	6,961	7.9E-01	9.3E-02	7.3E-01	9.2E-02
Trichlorobenzenes	9.26	18,197		3.5E-01	4.2E-02	3.5E-01	4.2E-02
Xylene isomers (total)	9.94	1,413		3.8E-01	4.5E-02	3.8E-01	4.5E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	5.6E+01	5.6E+01
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	6.3E+00	6.3E+00
Hexachlorobenzenes	9.7E-01	9.7E-01
Naphthalene	2.7E+01	2.7E+01
Phenanthrene	6.0E+00	6.0E+00
Phenol	9.5E-02	9.5E-02
Polychlorinated biphenyls	1.7E+00	1.7E+00
Pyrene	4.0E+00	4.0E+00
Toluene	2.6E+00	2.6E+00
Total mercury (methyl mercury for air emissions)	2.1E+01	2.1E+01
Trichlorobenzenes	9.3E+00	9.3E+00
Xylene isomers (total)	9.9E+00	9.9E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative G, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

		Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
Analyte	Average concentration of dredged material in mg/kg	Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.21	1.2E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	1.75	1.7E+02	4.5E-01	4.5E-01	7.1E-01	3.6E-01	3.6E-01
Chlorobenzene	12.91	1.3E+03	7.3E+02	7.2E+02	7.0E+02	7.3E+02	7.2E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	5.6E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	1.01	1.0E+02	5.3E+01	5.2E+01	5.1E+01	5.3E+01	5.2E+01
Fluorene	6.30	6.3E+02	2.6E+01	2.6E+01	2.6E+01	2.5E+01	2.5E+01
Hexachlorobenzenes	0.97	9.7E+01	2.4E-01	2.3E-01	3.8E-01	1.9E-01	1.9E-01
Naphthalene	26.93	2.7E+03	5.7E+02	5.6E+02	5.5E+02	5.6E+02	5.6E+02
Phenanthrene	6.03	6.0E+02	2.3E+00	2.3E+00	3.1E+00	1.9E+00	1.9E+00
Phenol	0.09	9.5E+00	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Polychlorinated biphenyls	1.67	1.7E+02	4.1E-01	4.1E-01	6.6E-01	3.3E-01	3.3E-01
Pyrene	3.98	4.0E+02	2.0E+00	2.0E+00	2.5E+00	1.7E+00	1.7E+00
Toluene	2.57	2.6E+02	1.5E+02	1.4E+02	1.4E+02	1.5E+02	1.4E+02
Total mercury (methyl mercury for air emissions)	20.54	2.1E+03	7.2E+00	7.2E+00	1.0E+01	6.0E+00	6.0E+00
Trichlorobenzenes	9.26	9.3E+02	3.2E+01	3.2E+01	3.2E+01	3.1E+01	3.1E+01
Xylene isomers (total)	9.94	9.9E+02	3.1E+02	3.0E+02	2.9E+02	3.1E+02	3.0E+02

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide G
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	308	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,246,432	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		384		12		8		8	
Benzene	1.21	0.411	0.411	0.318	0.318	0.318	0.318	0.007	0.007
Benzo[a]pyrene	1.75	0.010	0.005	0.010	0.009	0.009	0.000	0.009	0.000
Chlorobenzene	12.91	2.808	2.799	2.808	2.808	2.808	2.808	0.062	0.062
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	4.634	4.563	2.807	2.806	2.662	2.662	0.268	0.268
Ethylbenzene	1.01	0.204	0.203	0.036	0.036	0.034	0.034	0.013	0.013
Fluorene	6.30	0.126	0.115	0.029	0.029	0.029	0.029	0.028	0.028
Hexachlorobenzenes	0.97	0.005	0.003	0.005	0.005	0.005	0.005	0.005	0.005
Naphthalene	26.93	2.262	2.228	1.448	1.447	1.448	1.448	0.271	0.271
Phenanthrene	6.03	0.036	0.021	0.035	0.035	0.028	0.028	0.027	0.027
Phenol	0.09	0.033	0.033	0.021	0.021	0.015	0.015	0.004	0.004
Polychlorinated biphenyls	1.67	0.009	0.005	0.009	0.008	0.009	0.009	0.009	0.009
Pyrene	3.98	0.025	0.016	0.025	0.025	0.018	0.018	0.018	0.018
Toluene	2.57	0.564	0.562	0.409	0.409	0.377	0.377	0.012	0.012
Total mercury (methyl mercury for air emissions)	20.54	0.119	0.067	0.103	0.101	0.101	0.101	0.098	0.098
Trichlorobenzenes	9.26	0.162	0.147	0.142	0.141	0.106	0.106	0.059	0.059
Xylene isomers (total)	9.94	1.199	1.188	1.187	1.187	1.187	1.187	0.051	0.051

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,637,000
Dredge cut in feet (either average or to max conc):	19.5
Post-dredge water depth (either average or to max conc.) in feet:	26.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,580
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				10	0		
Benzene	3.68	100		3.7E-02	1.7E-03	3.7E-02	1.7E-03
Benzo[a]pyrene	0.86	1,096,478		8.6E-03	4.0E-04	8.3E-03	4.0E-04
Chlorobenzene	13.30	500		1.3E-01	6.1E-03	1.3E-01	6.1E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	23.70	2,399		2.4E-01	1.1E-02	2.4E-01	1.1E-02
Ethylbenzene	4.37	588		4.3E-02	2.0E-03	4.3E-02	2.0E-03
Fluorene	5.79	15,136		5.8E-02	2.7E-03	5.7E-02	2.7E-03
Hexachlorobenzenes	0.16	1,513,561		1.6E-03	7.6E-05	1.6E-03	7.6E-05
Naphthalene	98.87	2,344		9.8E-01	4.6E-02	9.8E-01	4.6E-02
Phenanthrene	7.78	342,748		7.7E-02	3.6E-03	7.6E-02	3.6E-03
Phenol	3.58	100		3.6E-02	1.7E-03	3.6E-02	1.7E-03
Polychlorinated biphenyls	0.78	1,380,384		7.8E-03	3.6E-04	7.6E-03	3.6E-04
Pyrene	2.96	208,930		2.9E-02	1.4E-03	2.9E-02	1.4E-03
Toluene	9.52	490		9.5E-02	4.4E-03	9.5E-02	4.4E-03
Total mercury (methyl mercury for air emissions)	10.55	348,050	6,961	1.1E-01	4.9E-03	1.0E-01	4.9E-03
Trichlorobenzenes	6.61	18,197		6.6E-02	3.0E-03	6.6E-02	3.0E-03
Xylene isomers (total)	62.04	1,413		6.2E-01	2.9E-02	6.2E-01	2.9E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,637,000
Dredge cut in feet (either average or to max conc):	19.5
Post-dredge water depth (either average or to max conc.) in feet:	26.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,580
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.7E+00	3.7E+00
Benzo[a]pyrene	8.6E-01	8.6E-01
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.4E+01	2.4E+01
Ethylbenzene	4.4E+00	4.4E+00
Fluorene	5.8E+00	5.8E+00
Hexachlorobenzenes	1.6E-01	1.6E-01
Naphthalene	9.9E+01	9.9E+01
Phenanthrene	7.8E+00	7.8E+00
Phenol	3.6E+00	3.6E+00
Polychlorinated biphenyls	7.8E-01	7.8E-01
Pyrene	3.0E+00	3.0E+00
Toluene	9.5E+00	9.5E+00
Total mercury (methyl mercury for air emissions)	1.1E+01	1.1E+01
Trichlorobenzenes	6.6E+00	6.6E+00
Xylene isomers (total)	6.2E+01	6.2E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,637,000
Dredge cut in feet (either average or to max conc):	19.5
Post-dredge water depth (either average or to max conc.) in feet:	26.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,580
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

		Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
Analyte	Average concentration of dredged material in mg/kg	Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	3.68	3.7E+02	3.2E+02	3.1E+02	3.1E+02	3.2E+02	3.1E+02
Benzo[a]pyrene	0.86	8.6E+01	1.3E-01	1.3E-01	3.0E-01	1.0E-01	1.0E-01
Chlorobenzene	13.30	1.3E+03	6.9E+02	6.8E+02	6.7E+02	6.9E+02	6.8E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	23.70	2.4E+03	4.3E+02	4.2E+02	4.1E+02	4.3E+02	4.2E+02
Ethylbenzene	4.37	4.4E+02	2.1E+02	2.0E+02	2.0E+02	2.1E+02	2.0E+02
Fluorene	5.79	5.8E+02	2.0E+01	1.9E+01	2.0E+01	1.9E+01	1.9E+01
Hexachlorobenzenes	0.16	1.6E+01	2.3E-02	2.3E-02	5.4E-02	1.8E-02	1.7E-02
Naphthalene	98.87	9.9E+03	1.8E+03	1.8E+03	1.8E+03	1.8E+03	1.8E+03
Phenanthrene	7.78	7.8E+02	2.0E+00	2.0E+00	3.5E+00	1.7E+00	1.6E+00
Phenol	3.58	3.6E+02	3.1E+02	3.1E+02	3.0E+02	3.1E+02	3.1E+02
Polychlorinated biphenyls	0.78	7.8E+01	1.1E-01	1.1E-01	2.6E-01	8.8E-02	8.8E-02
Pyrene	2.96	3.0E+02	1.1E+00	1.0E+00	1.6E+00	8.9E-01	8.8E-01
Toluene	9.52	9.5E+02	5.0E+02	4.9E+02	4.8E+02	5.0E+02	4.9E+02
Total mercury (methyl mercury for air emissions)	10.55	1.1E+03	2.7E+00	2.7E+00	4.7E+00	2.2E+00	2.2E+00
Trichlorobenzenes	6.61	6.6E+02	1.9E+01	1.9E+01	2.0E+01	1.8E+01	1.8E+01
Xylene isomers (total)	62.04	6.2E+03	1.7E+03	1.6E+03	1.6E+03	1.7E+03	1.6E+03

SMU (Insert Value: 1 through 7): 1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide H
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	2,637,000
Dredge cut in feet (either average or to max conc):	19.5
Post-dredge water depth (either average or to max conc.) in feet:	26.4

Dredging Characteristics

Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	17,580
Diameter in feet around dredge head to evaluate water quality (1):	100

Sediment Physical Characteristics

Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		42		1		1		1	
Benzene	3.68	0.132	0.132	0.102	0.102	0.102	0.102	0.002	0.002
Benzo[a]pyrene	0.86	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	13.30	0.288	0.288	0.288	0.288	0.288	0.288	0.007	0.007
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	23.70	0.187	0.187	0.114	0.114	0.108	0.108	0.012	0.012
Ethylbenzene	4.37	0.087	0.087	0.016	0.016	0.015	0.015	0.006	0.006
Fluorene	5.79	0.011	0.011	0.003	0.003	0.003	0.003	0.003	0.003
Hexachlorobenzenes	0.16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	98.87	0.786	0.785	0.505	0.505	0.505	0.505	0.098	0.098
Phenanthrene	7.78	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Phenol	3.58	0.131	0.131	0.083	0.083	0.059	0.059	0.017	0.017
Polychlorinated biphenyls	0.78	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	2.96	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
Toluene	9.52	0.208	0.208	0.151	0.151	0.139	0.139	0.004	0.004
Total mercury (methyl mercury for air emissions)	10.55	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Trichlorobenzenes	6.61	0.011	0.011	0.010	0.010	0.007	0.007	0.004	0.004
Xylene isomers (total)	62.04	0.717	0.716	0.710	0.710	0.710	0.710	0.032	0.032

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	403,000
Dredge cut in feet (either average or to max conc):	24.4
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,687
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				7	1		
Benzene	0.90	100		6.7E-03	9.0E-04	6.7E-03	9.0E-04
Benzo[a]pyrene	0.58	1,096,478		4.4E-03	5.9E-04	4.3E-03	5.9E-04
Chlorobenzene	7.15	500		5.3E-02	7.2E-03	5.3E-02	7.2E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.54	2,399		1.1E-02	1.5E-03	1.1E-02	1.5E-03
Ethylbenzene	0.51	588		3.8E-03	5.2E-04	3.8E-03	5.2E-04
Fluorene	0.80	15,136		5.9E-03	8.0E-04	5.9E-03	8.0E-04
Hexachlorobenzenes	0.01	1,513,561		5.8E-05	7.8E-06	5.7E-05	7.8E-06
Naphthalene	44.30	2,344		3.3E-01	4.4E-02	3.3E-01	4.4E-02
Phenanthrene	2.68	342,748		2.0E-02	2.7E-03	2.0E-02	2.7E-03
Phenol	0.22	100		1.6E-03	2.2E-04	1.6E-03	2.2E-04
Polychlorinated biphenyls	0.81	1,380,384		6.1E-03	8.2E-04	6.0E-03	8.2E-04
Pyrene	1.36	208,930		1.0E-02	1.4E-03	1.0E-02	1.4E-03
Toluene	0.88	490		6.6E-03	8.8E-04	6.6E-03	8.8E-04
Total mercury (methyl mercury for air emissions)	1.06	464,067	6,961	7.9E-03	1.1E-03	7.8E-03	1.1E-03
Trichlorobenzenes	0.22	18,197		1.7E-03	2.2E-04	1.7E-03	2.2E-04
Xylene isomers (total)	5.78	1,413		4.3E-02	5.8E-03	4.3E-02	5.8E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	403,000
Dredge cut in feet (either average or to max conc):	24.4
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,687
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	9.0E-01	9.0E-01
Benzo[a]pyrene	5.8E-01	5.8E-01
Chlorobenzene	7.1E+00	7.1E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.5E+00	1.5E+00
Ethylbenzene	5.1E-01	5.1E-01
Fluorene	8.0E-01	8.0E-01
Hexachlorobenzenes	7.8E-03	7.8E-03
Naphthalene	4.4E+01	4.4E+01
Phenanthrene	2.7E+00	2.7E+00
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	8.1E-01	8.1E-01
Pyrene	1.4E+00	1.4E+00
Toluene	8.8E-01	8.8E-01
Total mercury (methyl mercury for air emissions)	1.1E+00	1.1E+00
Trichlorobenzenes	2.2E-01	2.2E-01
Xylene isomers (total)	5.8E+00	5.8E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	403,000
Dredge cut in feet (either average or to max conc):	24.4
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,687
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.90	9.0E+01	8.2E+01	8.1E+01	7.8E+01	8.2E+01	8.1E+01
Benzo[a]pyrene	0.58	5.8E+01	9.7E-02	9.6E-02	2.7E-01	7.9E-02	7.9E-02
Chlorobenzene	7.15	7.1E+02	4.2E+02	4.2E+02	4.1E+02	4.2E+02	4.2E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.54	1.5E+02	3.5E+01	3.5E+01	3.4E+01	3.5E+01	3.5E+01
Ethylbenzene	0.51	5.1E+01	2.8E+01	2.8E+01	2.7E+01	2.8E+01	2.8E+01
Fluorene	0.80	8.0E+01	3.6E+00	3.5E+00	3.6E+00	3.5E+00	3.5E+00
Hexachlorobenzenes	0.01	7.8E-01	1.2E-03	1.1E-03	3.5E-03	9.4E-04	9.3E-04
Naphthalene	44.30	4.4E+03	1.0E+03	1.0E+03	9.9E+02	1.0E+03	1.0E+03
Phenanthrene	2.68	2.7E+02	8.1E-01	8.0E-01	1.6E+00	7.0E-01	6.9E-01
Phenol	0.22	2.2E+01	2.0E+01	2.0E+01	1.9E+01	2.0E+01	2.0E+01
Polychlorinated biphenyls	0.81	8.1E+01	1.2E-01	1.2E-01	3.6E-01	1.0E-01	1.0E-01
Pyrene	1.36	1.4E+02	5.9E-01	5.8E-01	9.7E-01	5.1E-01	5.1E-01
Toluene	0.88	8.8E+01	5.3E+01	5.2E+01	5.1E+01	5.3E+01	5.2E+01
Total mercury (methyl mercury for air emissions)	1.06	1.1E+02	2.7E-01	2.7E-01	5.7E-01	2.2E-01	2.2E-01
Trichlorobenzenes	0.22	2.2E+01	8.4E-01	8.3E-01	8.7E-01	8.2E-01	8.1E-01
Xylene isomers (total)	5.78	5.8E+02	1.9E+02	1.9E+02	1.9E+02	1.9E+02	1.9E+02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10
Total dredge volume in cy:	403,000
Dredge cut in feet (either average or to max conc):	24.4
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,687
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		85		3		2		2	
Benzene	0.90	0.069	0.069	0.053	0.053	0.053	0.053	0.001	0.001
Benzo[a]pyrene	0.58	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	7.15	0.361	0.361	0.361	0.361	0.361	0.361	0.008	0.008
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.54	0.031	0.031	0.019	0.019	0.018	0.018	0.002	0.002
Ethylbenzene	0.51	0.024	0.024	0.004	0.004	0.004	0.004	0.002	0.002
Fluorene	0.80	0.004	0.004	0.001	0.001	0.001	0.001	0.001	0.001
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	44.30	0.895	0.893	0.572	0.572	0.572	0.572	0.104	0.104
Phenanthrene	2.68	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Phenol	0.22	0.017	0.017	0.011	0.011	0.008	0.008	0.002	0.002
Polychlorinated biphenyls	0.81	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	1.36	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
Toluene	0.88	0.045	0.045	0.033	0.033	0.030	0.030	0.001	0.001
Total mercury (methyl mercury for air emissions)	1.06	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.22	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Xylene isomers (total)	5.78	0.166	0.166	0.165	0.165	0.165	0.165	0.007	0.007

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				22	3		
Benzene	1.77	100		3.9E-02	5.1E-03	3.9E-02	5.1E-03
Benzo[a]pyrene	0.05	1,096,478		1.1E-03	1.4E-04	1.0E-03	1.4E-04
Chlorobenzene	0.02	500		4.5E-04	5.8E-05	4.5E-04	5.8E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		8.4E-04	1.1E-04	8.4E-04	1.1E-04
Ethylbenzene	0.03	588		5.9E-04	7.6E-05	5.9E-04	7.6E-05
Fluorene	0.04	15,136		8.6E-04	1.1E-04	8.6E-04	1.1E-04
Hexachlorobenzenes	0.00	1,513,561		7.1E-05	9.1E-06	6.8E-05	9.1E-06
Naphthalene	0.24	2,344		5.3E-03	6.8E-04	5.3E-03	6.8E-04
Phenanthrene	0.05	342,748		1.1E-03	1.4E-04	1.1E-03	1.4E-04
Phenol	0.22	100		4.9E-03	6.3E-04	4.9E-03	6.3E-04
Polychlorinated biphenyls	0.28	1,380,384		6.2E-03	8.0E-04	6.0E-03	8.0E-04
Pyrene	0.07	208,930		1.6E-03	2.1E-04	1.6E-03	2.1E-04
Toluene	0.23	490		5.1E-03	6.5E-04	5.1E-03	6.5E-04
Total mercury (methyl mercury for air emissions)	0.63	696,100	6,961	1.4E-02	1.8E-03	1.4E-02	1.8E-03
Trichlorobenzenes	0.04	18,197		8.4E-04	1.1E-04	8.3E-04	1.1E-04
Xylene isomers (total)	0.30	1,413		6.6E-03	8.5E-04	6.6E-03	8.5E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.8E+00	1.8E+00
Benzo[a]pyrene	4.8E-02	4.8E-02
Chlorobenzene	2.0E-02	2.0E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	2.6E-02	2.6E-02
Fluorene	3.9E-02	3.9E-02
Hexachlorobenzenes	3.2E-03	3.2E-03
Naphthalene	2.4E-01	2.4E-01
Phenanthrene	4.9E-02	4.9E-02
Phenol	2.2E-01	2.2E-01
Polychlorinated biphenyls	2.8E-01	2.8E-01
Pyrene	7.4E-02	7.4E-02
Toluene	2.3E-01	2.3E-01
Total mercury (methyl mercury for air emissions)	6.3E-01	6.3E-01
Trichlorobenzenes	3.8E-02	3.8E-02
Xylene isomers (total)	3.0E-01	3.0E-01

SMU (Insert Value: 1 through 7): 3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide H
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 10.8
Total dredge volume in cy: 75,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 15

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 500

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 28%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 325 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,315,228

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.77	1.8E+02	1.7E+02	1.7E+02	1.6E+02	1.7E+02	1.7E+02
Benzo[a]pyrene	0.05	4.8E+00	2.1E-02	2.1E-02	3.3E-02	1.9E-02	1.9E-02
Chlorobenzene	0.02	2.0E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00	1.4E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.03	2.6E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
Fluorene	0.04	3.9E+00	2.6E-01	2.6E-01	2.6E-01	2.6E-01	2.6E-01
Hexachlorobenzenes	0.00	3.2E-01	1.3E-03	1.3E-03	2.1E-03	1.2E-03	1.2E-03
Naphthalene	0.24	2.4E+01	7.4E+00	7.4E+00	7.2E+00	7.4E+00	7.3E+00
Phenanthrene	0.05	4.9E+00	3.2E-02	3.2E-02	4.3E-02	2.9E-02	2.8E-02
Phenol	0.22	2.2E+01	2.1E+01	2.1E+01	2.0E+01	2.1E+01	2.1E+01
Polychlorinated biphenyls	0.28	2.8E+01	1.2E-01	1.2E-01	1.9E-01	1.0E-01	1.0E-01
Pyrene	0.07	7.4E+00	6.2E-02	6.2E-02	7.9E-02	5.7E-02	5.7E-02
Toluene	0.23	2.3E+01	1.6E+01	1.6E+01	1.5E+01	1.6E+01	1.6E+01
Total mercury (methyl mercury for air emissions)	0.63	6.3E+01	3.2E-01	3.2E-01	4.7E-01	2.8E-01	2.8E-01
Trichlorobenzenes	0.04	3.8E+00	2.2E-01	2.1E-01	2.2E-01	2.1E-01	2.1E-01
Xylene isomers (total)	0.30	3.0E+01	1.3E+01	1.3E+01	1.2E+01	1.3E+01	1.3E+01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	10.8
Total dredge volume in cy:	75,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	15
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	500
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		207		7		5		5	
Benzene	1.77	0.343	0.343	0.265	0.265	0.265	0.265	0.007	0.007
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.02	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.03	0.004	0.004	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.24	0.016	0.016	0.010	0.010	0.010	0.010	0.002	0.002
Phenanthrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.22	0.043	0.043	0.027	0.027	0.019	0.019	0.005	0.005
Polychlorinated biphenyls	0.28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.23	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	0.63	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Trichlorobenzenes	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.30	0.027	0.027	0.026	0.026	0.026	0.026	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				55	5		
Benzene	0.01	100		3.1E-04	2.8E-05	3.1E-04	2.8E-05
Benzo[a]pyrene	0.08	1,096,478		4.4E-03	4.0E-04	4.0E-03	3.9E-04
Chlorobenzene	0.01	500		3.5E-04	3.2E-05	3.5E-04	3.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2,399		1.5E-03	1.4E-04	1.5E-03	1.4E-04
Ethylbenzene	0.01	588		6.6E-04	5.9E-05	6.6E-04	5.9E-05
Fluorene	0.03	15,136		1.8E-03	1.6E-04	1.7E-03	1.6E-04
Hexachlorobenzenes	0.11	1,513,561		6.0E-03	5.4E-04	5.4E-03	5.4E-04
Naphthalene	0.07	2,344		4.1E-03	3.7E-04	4.1E-03	3.7E-04
Phenanthrene	0.08	342,748		4.6E-03	4.1E-04	4.2E-03	4.1E-04
Phenol	0.08	100		4.5E-03	4.1E-04	4.5E-03	4.1E-04
Polychlorinated biphenyls	0.37	1,380,384		2.0E-02	1.8E-03	1.8E-02	1.8E-03
Pyrene	0.19	208,930		1.0E-02	9.3E-04	9.5E-03	9.2E-04
Toluene	0.00	490		2.7E-04	2.4E-05	2.7E-04	2.4E-05
Total mercury (methyl mercury for air emissions)	7.46	497,214	6,961	4.1E-01	3.7E-02	3.8E-01	3.7E-02
Trichlorobenzenes	0.02	18,197		9.4E-04	8.5E-05	9.2E-04	8.5E-05
Xylene isomers (total)	0.09	1,413		4.9E-03	4.4E-04	4.9E-03	4.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.5E-03	5.5E-03
Benzo[a]pyrene	8.0E-02	8.0E-02
Chlorobenzene	6.3E-03	6.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.7E-02	2.7E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	7.5E-02	7.5E-02
Phenanthrene	8.3E-02	8.3E-02
Phenol	8.1E-02	8.1E-02
Polychlorinated biphenyls	3.7E-01	3.7E-01
Pyrene	1.9E-01	1.9E-01
Toluene	4.9E-03	4.9E-03
Total mercury (methyl mercury for air emissions)	7.5E+00	7.5E+00
Trichlorobenzenes	1.7E-02	1.7E-02
Xylene isomers (total)	8.9E-02	8.9E-02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.01	5.5E-01	5.1E-01	5.0E-01	4.9E-01	5.1E-01	5.0E-01
Benzo[a]pyrene	0.08	8.0E+00	1.9E-02	1.9E-02	3.9E-02	1.6E-02	1.6E-02
Chlorobenzene	0.01	6.3E-01	3.9E-01	3.8E-01	3.7E-01	3.9E-01	3.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	2.7E+00	6.5E-01	6.5E-01	6.3E-01	6.5E-01	6.5E-01
Ethylbenzene	0.01	1.2E+00	6.8E-01	6.7E-01	6.5E-01	6.8E-01	6.7E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.4E-02	2.3E-02	5.1E-02	2.0E-02	1.9E-02
Naphthalene	0.07	7.5E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00	1.8E+00
Phenanthrene	0.08	8.3E+00	3.2E-02	3.1E-02	5.2E-02	2.8E-02	2.7E-02
Phenol	0.08	8.1E+00	7.4E+00	7.4E+00	7.1E+00	7.4E+00	7.4E+00
Polychlorinated biphenyls	0.37	3.7E+01	8.3E-02	8.3E-02	1.8E-01	6.9E-02	6.9E-02
Pyrene	0.19	1.9E+01	9.7E-02	9.6E-02	1.4E-01	8.6E-02	8.5E-02
Toluene	0.00	4.9E-01	3.0E-01	3.0E-01	2.9E-01	3.0E-01	3.0E-01
Total mercury (methyl mercury for air emissions)	7.46	7.5E+02	2.4E+00	2.4E+00	4.2E+00	2.0E+00	2.0E+00
Trichlorobenzenes	0.02	1.7E+00	6.9E-02	6.8E-02	7.1E-02	6.8E-02	6.7E-02
Xylene isomers (total)	0.09	8.9E+00	3.1E+00	3.1E+00	3.0E+00	3.1E+00	3.0E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-1
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	22
Total dredge volume in cy:	135,000
Dredge cut in feet (either average or to max conc):	3.8
Post-dredge water depth (either average or to max conc.) in feet:	6.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		337		12		8		8	
Benzene	0.01	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.03	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.01	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Naphthalene	0.07	0.006	0.006	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.08	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.08	0.025	0.025	0.016	0.016	0.011	0.011	0.003	0.003
Polychlorinated biphenyls	0.37	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Pyrene	0.19	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.00	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	7.46	0.045	0.028	0.040	0.040	0.040	0.040	0.039	0.039
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.09	0.011	0.011	0.011	0.011	0.011	0.011	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative H, SMU 5
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	20
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				31	3		
Benzene	0.00	100		1.2E-04	1.1E-05	1.2E-04	1.1E-05
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	3.1E-04	3.1E-03	3.0E-04
Chlorobenzene	0.00	500		1.2E-04	1.1E-05	1.2E-04	1.1E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	1.1E-04	1.2E-03	1.1E-04
Ethylbenzene	0.00	588		1.2E-04	1.1E-05	1.2E-04	1.1E-05
Fluorene	0.05	15,136		1.7E-03	1.6E-04	1.6E-03	1.6E-04
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	2.2E-05	2.2E-04	2.2E-05
Naphthalene	0.14	2,344		4.2E-03	4.0E-04	4.2E-03	4.0E-04
Phenanthrene	0.14	342,748		4.4E-03	4.2E-04	4.2E-03	4.1E-04
Phenol	0.02	100		5.3E-04	5.1E-05	5.3E-04	5.1E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	7.3E-04	7.3E-03	7.3E-04
Pyrene	0.21	208,930		6.5E-03	6.2E-04	6.3E-03	6.2E-04
Toluene	0.02	490		6.5E-04	6.1E-05	6.5E-04	6.1E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	2.2E-03	2.2E-02	2.2E-03
Trichlorobenzenes	0.02	18,197		6.9E-04	6.6E-05	6.9E-04	6.6E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	1.1E-05	1.2E-04	1.1E-05

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	20
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	20
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.6E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.7E-01	2.6E-01	2.7E-01	2.7E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.5E-01	2.4E-01	2.5E-01	2.5E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.2E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.1E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.8E-01	1.3E-01	2.5E-01	2.5E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	3.8E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.1E-01
Toluene	0.02	2.1E+00	1.5E+00	1.5E+00	1.4E+00	1.5E+00	1.5E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.2E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

SMU (Insert Value: 1 through 7): 5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide H
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 20
Total dredge volume in cy: 140,000
Dredge cut in feet (either average or to max conc): 4.3
Post-dredge water depth (either average or to max conc.) in feet: 12.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 933

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 6%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 53%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 — Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 325 — Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,315,228

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		183		6		5		5	
Benzene	0.00	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.008	0.008	0.005	0.005	0.005	0.005	0.001	0.001
Phenanthrene	0.14	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.02	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.02	0.003	0.003	0.002	0.002	0.002	0.002	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.005	0.004	0.003	0.003	0.003	0.003	0.003	0.003
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				39	3		
Benzene	0.13	100		5.0E-03	3.7E-04	5.0E-03	3.7E-04
Benzo[a]pyrene	1.75	1,096,478		6.8E-02	5.1E-03	6.2E-02	5.0E-03
Chlorobenzene	0.49	500		1.9E-02	1.4E-03	1.9E-02	1.4E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	2,399		2.5E-02	1.8E-03	2.5E-02	1.8E-03
Ethylbenzene	0.22	588		8.4E-03	6.2E-04	8.4E-03	6.2E-04
Fluorene	1.35	15,136		5.3E-02	3.9E-03	5.3E-02	3.9E-03
Hexachlorobenzenes	0.03	1,513,561		1.3E-03	9.6E-05	1.2E-03	9.5E-05
Naphthalene	2.93	2,344		1.2E-01	8.5E-03	1.1E-01	8.5E-03
Phenanthrene	5.18	342,748		2.0E-01	1.5E-02	1.9E-01	1.5E-02
Phenol	0.06	100		2.2E-03	1.6E-04	2.2E-03	1.6E-04
Polychlorinated biphenyls	1.19	1,380,384		4.7E-02	3.4E-03	4.2E-02	3.4E-03
Pyrene	3.63	208,930		1.4E-01	1.1E-02	1.3E-01	1.0E-02
Toluene	0.11	490		4.1E-03	3.1E-04	4.1E-03	3.1E-04
Total mercury (methyl mercury for air emissions)	2.86	366,368	6,961	1.1E-01	8.3E-03	1.0E-01	8.3E-03
Trichlorobenzenes	0.53	18,197		2.1E-02	1.5E-03	2.1E-02	1.5E-03
Xylene isomers (total)	0.32	1,413		1.3E-02	9.4E-04	1.3E-02	9.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.3E-01	1.3E-01
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	4.9E-01	4.9E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.3E-01	6.3E-01
Ethylbenzene	2.2E-01	2.2E-01
Fluorene	1.4E+00	1.4E+00
Hexachlorobenzenes	3.3E-02	3.3E-02
Naphthalene	2.9E+00	2.9E+00
Phenanthrene	5.2E+00	5.2E+00
Phenol	5.5E-02	5.5E-02
Polychlorinated biphenyls	1.2E+00	1.2E+00
Pyrene	3.6E+00	3.6E+00
Toluene	1.1E-01	1.1E-01
Total mercury (methyl mercury for air emissions)	2.9E+00	2.9E+00
Trichlorobenzenes	5.3E-01	5.3E-01
Xylene isomers (total)	3.2E-01	3.2E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.13	1.3E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01	1.1E+01
Benzo[a]pyrene	1.75	1.7E+02	5.2E-01	5.2E-01	6.3E-01	4.1E-01	4.1E-01
Chlorobenzene	0.49	4.9E+01	2.6E+01	2.6E+01	2.5E+01	2.6E+01	2.6E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	6.3E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01	1.2E+01
Ethylbenzene	0.22	2.2E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Fluorene	1.35	1.4E+02	5.0E+00	5.0E+00	4.9E+00	4.9E+00	4.8E+00
Hexachlorobenzenes	0.03	3.3E+00	9.4E-03	9.3E-03	1.2E-02	7.3E-03	7.2E-03
Naphthalene	2.93	2.9E+02	5.6E+01	5.6E+01	5.4E+01	5.6E+01	5.5E+01
Phenanthrene	5.18	5.2E+02	2.1E+00	2.1E+00	2.4E+00	1.7E+00	1.7E+00
Phenol	0.06	5.5E+00	4.8E+00	4.8E+00	4.6E+00	4.8E+00	4.8E+00
Polychlorinated biphenyls	1.19	1.2E+02	3.4E-01	3.4E-01	4.2E-01	2.7E-01	2.7E-01
Pyrene	3.63	3.6E+02	1.8E+00	1.8E+00	2.1E+00	1.6E+00	1.6E+00
Toluene	0.11	1.1E+01	5.7E+00	5.6E+00	5.5E+00	5.7E+00	5.6E+00
Total mercury (methyl mercury for air emissions)	2.86	2.9E+02	1.1E+00	1.1E+00	1.3E+00	9.4E-01	9.4E-01
Trichlorobenzenes	0.53	5.3E+01	1.7E+00	1.7E+00	1.7E+00	1.6E+00	1.6E+00
Xylene isomers (total)	0.32	3.2E+01	9.2E+00	9.0E+00	8.8E+00	9.2E+00	9.0E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative H, SMU 6
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	33
Total dredge volume in cy:	245,000
Dredge cut in feet (either average or to max conc):	4.6
Post-dredge water depth (either average or to max conc.) in feet:	8.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	1,633
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		208		7		5		5	
Benzene	0.13	0.023	0.023	0.018	0.018	0.018	0.018	0.000	0.000
Benzo[a]pyrene	1.75	0.006	0.004	0.006	0.006	0.006	0.000	0.006	0.000
Chlorobenzene	0.49	0.054	0.054	0.054	0.054	0.054	0.054	0.001	0.001
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.63	0.026	0.026	0.016	0.016	0.015	0.015	0.002	0.002
Ethylbenzene	0.22	0.022	0.022	0.004	0.004	0.004	0.004	0.002	0.002
Fluorene	1.35	0.014	0.013	0.004	0.004	0.004	0.004	0.004	0.004
Hexachlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.93	0.123	0.122	0.079	0.079	0.079	0.079	0.017	0.017
Phenanthrene	5.18	0.019	0.013	0.019	0.019	0.016	0.016	0.015	0.015
Phenol	0.06	0.010	0.010	0.006	0.006	0.005	0.005	0.001	0.001
Polychlorinated biphenyls	1.19	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004
Pyrene	3.63	0.014	0.010	0.014	0.014	0.011	0.011	0.011	0.011
Toluene	0.11	0.012	0.012	0.009	0.009	0.008	0.008	0.000	0.000
Total mercury (methyl mercury for air emissions)	2.86	0.011	0.007	0.009	0.009	0.009	0.009	0.009	0.009
Trichlorobenzenes	0.53	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002
Xylene isomers (total)	0.32	0.020	0.019	0.019	0.019	0.019	0.019	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				38	4		
Benzene	1.21	100		4.6E-02	5.4E-03	4.6E-02	5.4E-03
Benzo[a]pyrene	1.75	1,096,478		6.7E-02	7.8E-03	6.1E-02	7.7E-03
Chlorobenzene	12.91	500		4.9E-01	5.7E-02	4.9E-01	5.7E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	2,399		2.1E+00	2.5E-01	2.1E+00	2.5E-01
Ethylbenzene	1.01	588		3.9E-02	4.5E-03	3.9E-02	4.5E-03
Fluorene	6.30	15,136		2.4E-01	2.8E-02	2.4E-01	2.8E-02
Hexachlorobenzenes	0.97	1,513,561		3.7E-02	4.3E-03	3.4E-02	4.2E-03
Naphthalene	26.93	2,344		1.0E+00	1.2E-01	1.0E+00	1.2E-01
Phenanthrene	6.03	342,748		2.3E-01	2.7E-02	2.1E-01	2.7E-02
Phenol	0.09	100		3.6E-03	4.2E-04	3.6E-03	4.2E-04
Polychlorinated biphenyls	1.67	1,380,384		6.4E-02	7.4E-03	5.8E-02	7.3E-03
Pyrene	3.98	208,930		1.5E-01	1.8E-02	1.4E-01	1.8E-02
Toluene	2.57	490		9.8E-02	1.1E-02	9.8E-02	1.1E-02
Total mercury (methyl mercury for air emissions)	20.54	409,471	6,961	7.9E-01	9.1E-02	7.3E-01	9.0E-02
Trichlorobenzenes	9.26	18,197		3.5E-01	4.1E-02	3.5E-01	4.1E-02
Xylene isomers (total)	9.94	1,413		3.8E-01	4.4E-02	3.8E-01	4.4E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	1.7E+00	1.7E+00
Chlorobenzene	1.3E+01	1.3E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	5.6E+01	5.6E+01
Ethylbenzene	1.0E+00	1.0E+00
Fluorene	6.3E+00	6.3E+00
Hexachlorobenzenes	9.7E-01	9.7E-01
Naphthalene	2.7E+01	2.7E+01
Phenanthrene	6.0E+00	6.0E+00
Phenol	9.5E-02	9.5E-02
Polychlorinated biphenyls	1.7E+00	1.7E+00
Pyrene	4.0E+00	4.0E+00
Toluene	2.6E+00	2.6E+00
Total mercury (methyl mercury for air emissions)	2.1E+01	2.1E+01
Trichlorobenzenes	9.3E+00	9.3E+00
Xylene isomers (total)	9.9E+00	9.9E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative H, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide H
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	13.4
Total dredge volume in cy:	89,000
Dredge cut in feet (either average or to max conc):	4.1
Post-dredge water depth (either average or to max conc.) in feet:	7.3
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	593
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	325	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,315,228	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.21	1.2E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	1.75	1.7E+02	4.5E-01	4.5E-01	7.1E-01	3.6E-01	3.6E-01
Chlorobenzene	12.91	1.3E+03	7.3E+02	7.2E+02	7.0E+02	7.3E+02	7.2E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	5.6E+03	1.2E+03	1.1E+03	1.1E+03	1.2E+03	1.1E+03
Ethylbenzene	1.01	1.0E+02	5.3E+01	5.2E+01	5.1E+01	5.3E+01	5.2E+01
Fluorene	6.30	6.3E+02	2.6E+01	2.6E+01	2.6E+01	2.5E+01	2.5E+01
Hexachlorobenzenes	0.97	9.7E+01	2.4E-01	2.3E-01	3.8E-01	1.9E-01	1.9E-01
Naphthalene	26.93	2.7E+03	5.7E+02	5.6E+02	5.5E+02	5.6E+02	5.6E+02
Phenanthrene	6.03	6.0E+02	2.3E+00	2.3E+00	3.1E+00	1.9E+00	1.9E+00
Phenol	0.09	9.5E+00	8.4E+00	8.4E+00	8.1E+00	8.4E+00	8.4E+00
Polychlorinated biphenyls	1.67	1.7E+02	4.1E-01	4.1E-01	6.6E-01	3.3E-01	3.3E-01
Pyrene	3.98	4.0E+02	2.0E+00	2.0E+00	2.5E+00	1.7E+00	1.7E+00
Toluene	2.57	2.6E+02	1.5E+02	1.4E+02	1.4E+02	1.5E+02	1.4E+02
Total mercury (methyl mercury for air emissions)	20.54	2.1E+03	7.2E+00	7.2E+00	1.0E+01	6.0E+00	6.0E+00
Trichlorobenzenes	9.26	9.3E+02	3.2E+01	3.2E+01	3.2E+01	3.1E+01	3.1E+01
Xylene isomers (total)	9.94	9.9E+02	3.1E+02	3.0E+02	2.9E+02	3.1E+02	3.0E+02

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide H
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 13.4
Total dredge volume in cy: 89,000
Dredge cut in feet (either average or to max conc): 4.1
Post-dredge water depth (either average or to max conc.) in feet: 7.3

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 593

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 325 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,315,228

Avg Sed Specific gravity 2.5

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		378		12		8		8	
Benzene	1.21	0.405	0.405	0.313	0.313	0.313	0.313	0.007	0.007
Benzo[a]pyrene	1.75	0.009	0.005	0.009	0.009	0.009	0.000	0.009	0.000
Chlorobenzene	12.91	2.766	2.757	2.766	2.766	2.766	2.766	0.061	0.061
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	55.95	4.564	4.496	2.765	2.764	2.622	2.622	0.264	0.264
Ethylbenzene	1.01	0.201	0.200	0.036	0.036	0.034	0.034	0.013	0.013
Fluorene	6.30	0.124	0.114	0.029	0.029	0.029	0.029	0.028	0.028
Hexachlorobenzenes	0.97	0.005	0.003	0.005	0.005	0.005	0.005	0.005	0.005
Naphthalene	26.93	2.228	2.195	1.426	1.426	1.426	1.426	0.267	0.267
Phenanthrene	6.03	0.035	0.020	0.035	0.034	0.028	0.028	0.027	0.027
Phenol	0.09	0.032	0.032	0.020	0.020	0.014	0.014	0.004	0.004
Polychlorinated biphenyls	1.67	0.009	0.005	0.009	0.008	0.009	0.009	0.009	0.009
Pyrene	3.98	0.025	0.016	0.025	0.024	0.018	0.018	0.018	0.018
Toluene	2.57	0.555	0.554	0.403	0.403	0.372	0.372	0.011	0.011
Total mercury (methyl mercury for air emissions)	20.54	0.117	0.067	0.102	0.099	0.100	0.100	0.096	0.096
Trichlorobenzenes	9.26	0.160	0.145	0.140	0.139	0.104	0.104	0.058	0.058
Xylene isomers (total)	9.94	1.181	1.170	1.169	1.169	1.169	1.169	0.050	0.050

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				7	0		
Benzene	3.23	100		2.1E-02	9.9E-04	2.1E-02	9.9E-04
Benzo[a]pyrene	0.85	1,096,478		5.7E-03	2.6E-04	5.6E-03	2.6E-04
Chlorobenzene	11.64	500		7.7E-02	3.6E-03	7.7E-02	3.6E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	2,399		1.4E-01	6.4E-03	1.4E-01	6.4E-03
Ethylbenzene	3.85	588		2.6E-02	1.2E-03	2.6E-02	1.2E-03
Fluorene	5.30	15,136		3.5E-02	1.6E-03	3.5E-02	1.6E-03
Hexachlorobenzenes	0.14	1,513,561		9.6E-04	4.4E-05	9.4E-04	4.4E-05
Naphthalene	87.26	2,344		5.8E-01	2.7E-02	5.8E-01	2.7E-02
Phenanthrene	7.47	342,748		5.0E-02	2.3E-03	4.9E-02	2.3E-03
Phenol	3.39	100		2.3E-02	1.0E-03	2.3E-02	1.0E-03
Polychlorinated biphenyls	0.72	1,380,384		4.8E-03	2.2E-04	4.7E-03	2.2E-04
Pyrene	2.88	208,930		1.9E-02	8.9E-04	1.9E-02	8.9E-04
Toluene	8.39	490		5.6E-02	2.6E-03	5.6E-02	2.6E-03
Total mercury (methyl mercury for air emissions)	9.36	348,050	6,961	6.2E-02	2.9E-03	6.1E-02	2.9E-03
Trichlorobenzenes	5.79	18,197		3.9E-02	1.8E-03	3.8E-02	1.8E-03
Xylene isomers (total)	54.53	1,413		3.6E-01	1.7E-02	3.6E-01	1.7E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.2E+00	3.2E+00
Benzo[a]pyrene	8.5E-01	8.5E-01
Chlorobenzene	1.2E+01	1.2E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.1E+01	2.1E+01
Ethylbenzene	3.8E+00	3.8E+00
Fluorene	5.3E+00	5.3E+00
Hexachlorobenzenes	1.4E-01	1.4E-01
Naphthalene	8.7E+01	8.7E+01
Phenanthrene	7.5E+00	7.5E+00
Phenol	3.4E+00	3.4E+00
Polychlorinated biphenyls	7.2E-01	7.2E-01
Pyrene	2.9E+00	2.9E+00
Toluene	8.4E+00	8.4E+00
Total mercury (methyl mercury for air emissions)	9.4E+00	9.4E+00
Trichlorobenzenes	5.8E+00	5.8E+00
Xylene isomers (total)	5.5E+01	5.5E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

		Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
Analyte	Average concentration of dredged material in mg/kg	Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	3.23	3.2E+02	2.8E+02	2.7E+02	2.7E+02	2.8E+02	2.7E+02
Benzo[a]pyrene	0.85	8.5E+01	1.3E-01	1.3E-01	2.9E-01	1.0E-01	1.0E-01
Chlorobenzene	11.64	1.2E+03	6.1E+02	5.9E+02	5.8E+02	6.1E+02	5.9E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	2.1E+03	3.7E+02	3.7E+02	3.6E+02	3.7E+02	3.7E+02
Ethylbenzene	3.85	3.8E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02
Fluorene	5.30	5.3E+02	1.8E+01	1.8E+01	1.8E+01	1.8E+01	1.7E+01
Hexachlorobenzenes	0.14	1.4E+01	2.1E-02	2.0E-02	4.8E-02	1.6E-02	1.5E-02
Naphthalene	87.26	8.7E+03	1.6E+03	1.6E+03	1.6E+03	1.6E+03	1.6E+03
Phenanthrene	7.47	7.5E+02	1.9E+00	1.9E+00	3.3E+00	1.6E+00	1.5E+00
Phenol	3.39	3.4E+02	3.0E+02	2.9E+02	2.8E+02	3.0E+02	2.9E+02
Polychlorinated biphenyls	0.72	7.2E+01	1.1E-01	1.1E-01	2.4E-01	8.1E-02	8.1E-02
Pyrene	2.88	2.9E+02	1.0E+00	1.0E+00	1.5E+00	8.7E-01	8.5E-01
Toluene	8.39	8.4E+02	4.4E+02	4.3E+02	4.2E+02	4.4E+02	4.3E+02
Total mercury (methyl mercury for air emissions)	9.36	9.4E+02	2.4E+00	2.4E+00	4.1E+00	2.0E+00	2.0E+00
Trichlorobenzenes	5.79	5.8E+02	1.7E+01	1.6E+01	1.7E+01	1.6E+01	1.6E+01
Xylene isomers (total)	54.53	5.5E+03	1.5E+03	1.4E+03	1.4E+03	1.5E+03	1.4E+03

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		28		1		1		1	
Benzene	3.23	0.077	0.077	0.060	0.060	0.060	0.060	0.001	0.001
Benzo[a]pyrene	0.85	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	11.64	0.169	0.169	0.169	0.169	0.169	0.169	0.004	0.004
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	0.110	0.110	0.067	0.067	0.063	0.063	0.007	0.007
Ethylbenzene	3.85	0.051	0.051	0.009	0.009	0.009	0.009	0.003	0.003
Fluorene	5.30	0.007	0.007	0.002	0.002	0.002	0.002	0.002	0.002
Hexachlorobenzenes	0.14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	87.26	0.464	0.463	0.298	0.298	0.298	0.298	0.058	0.058
Phenanthrene	7.47	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
Phenol	3.39	0.083	0.083	0.053	0.053	0.037	0.037	0.010	0.010
Polychlorinated biphenyls	0.72	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	2.88	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	8.39	0.123	0.123	0.089	0.089	0.082	0.082	0.003	0.003
Total mercury (methyl mercury for air emissions)	9.36	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Trichlorobenzenes	5.79	0.006	0.006	0.006	0.006	0.004	0.004	0.002	0.002
Xylene isomers (total)	54.53	0.421	0.421	0.417	0.417	0.417	0.417	0.019	0.019

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	16
Total dredge volume in cy:	533,000
Dredge cut in feet (either average or to max conc):	21
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	3,553
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				7	1		
Benzene	1.03	100		7.7E-03	8.2E-04	7.7E-03	8.2E-04
Benzo[a]pyrene	0.66	1,096,478		5.0E-03	5.3E-04	4.9E-03	5.3E-04
Chlorobenzene	8.17	500		6.1E-02	6.5E-03	6.1E-02	6.5E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.75	2,399		1.3E-02	1.4E-03	1.3E-02	1.4E-03
Ethylbenzene	0.59	588		4.4E-03	4.7E-04	4.4E-03	4.7E-04
Fluorene	0.91	15,136		6.8E-03	7.2E-04	6.8E-03	7.2E-04
Hexachlorobenzenes	0.01	1,513,561		6.6E-05	7.0E-06	6.5E-05	7.0E-06
Naphthalene	50.62	2,344		3.8E-01	4.0E-02	3.8E-01	4.0E-02
Phenanthrene	3.06	342,748		2.3E-02	2.4E-03	2.3E-02	2.4E-03
Phenol	0.25	100		1.8E-03	2.0E-04	1.8E-03	2.0E-04
Polychlorinated biphenyls	0.89	1,380,384		6.6E-03	7.0E-04	6.5E-03	7.0E-04
Pyrene	1.55	208,930		1.2E-02	1.2E-03	1.1E-02	1.2E-03
Toluene	1.01	490		7.5E-03	8.0E-04	7.5E-03	8.0E-04
Total mercury (methyl mercury for air emissions)	1.20	464,067	6,961	9.0E-03	9.6E-04	8.9E-03	9.5E-04
Trichlorobenzenes	0.22	18,197		1.7E-03	1.8E-04	1.7E-03	1.8E-04
Xylene isomers (total)	6.60	1,413		4.9E-02	5.2E-03	4.9E-02	5.2E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	16
Total dredge volume in cy:	533,000
Dredge cut in feet (either average or to max conc):	21
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	3,553
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.0E+00	1.0E+00
Benzo[a]pyrene	6.6E-01	6.6E-01
Chlorobenzene	8.2E+00	8.2E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.8E+00	1.8E+00
Ethylbenzene	5.9E-01	5.9E-01
Fluorene	9.1E-01	9.1E-01
Hexachlorobenzenes	8.9E-03	8.9E-03
Naphthalene	5.1E+01	5.1E+01
Phenanthrene	3.1E+00	3.1E+00
Phenol	2.5E-01	2.5E-01
Polychlorinated biphenyls	8.9E-01	8.9E-01
Pyrene	1.5E+00	1.5E+00
Toluene	1.0E+00	1.0E+00
Total mercury (methyl mercury for air emissions)	1.2E+00	1.2E+00
Trichlorobenzenes	2.2E-01	2.2E-01
Xylene isomers (total)	6.6E+00	6.6E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	16
Total dredge volume in cy:	533,000
Dredge cut in feet (either average or to max conc):	21
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	3,553
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.03	1.0E+02	9.3E+01	9.2E+01	9.0E+01	9.3E+01	9.2E+01
Benzo[a]pyrene	0.66	6.6E+01	1.1E-01	1.1E-01	3.0E-01	9.0E-02	9.0E-02
Chlorobenzene	8.17	8.2E+02	4.9E+02	4.8E+02	4.7E+02	4.9E+02	4.8E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.75	1.8E+02	4.0E+01	4.0E+01	3.9E+01	4.0E+01	3.9E+01
Ethylbenzene	0.59	5.9E+01	3.3E+01	3.2E+01	3.1E+01	3.2E+01	3.2E+01
Fluorene	0.91	9.1E+01	4.1E+00	4.0E+00	4.2E+00	4.0E+00	3.9E+00
Hexachlorobenzenes	0.01	8.9E-01	1.3E-03	1.3E-03	3.9E-03	1.1E-03	1.0E-03
Naphthalene	50.62	5.1E+03	1.2E+03	1.2E+03	1.1E+03	1.2E+03	1.2E+03
Phenanthrene	3.06	3.1E+02	9.3E-01	9.1E-01	1.8E+00	7.9E-01	7.8E-01
Phenol	0.25	2.5E+01	2.2E+01	2.2E+01	2.1E+01	2.2E+01	2.2E+01
Polychlorinated biphenyls	0.89	8.9E+01	1.4E-01	1.4E-01	4.0E-01	1.1E-01	1.1E-01
Pyrene	1.55	1.5E+02	6.7E-01	6.6E-01	1.1E+00	5.9E-01	5.8E-01
Toluene	1.01	1.0E+02	6.0E+01	6.0E+01	5.8E+01	6.0E+01	6.0E+01
Total mercury (methyl mercury for air emissions)	1.20	1.2E+02	3.0E-01	3.0E-01	6.5E-01	2.6E-01	2.6E-01
Trichlorobenzenes	0.22	2.2E+01	8.4E-01	8.3E-01	8.7E-01	8.2E-01	8.1E-01

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-7
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	16
Total dredge volume in cy:	533,000
Dredge cut in feet (either average or to max conc):	21
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	3,553
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Xylene isomers (total)	6.60	6.6E+02	2.2E+02	2.2E+02	2.1E+02	2.2E+02	2.2E+02

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		67		2		1		1	
Benzene	1.03	0.062	0.062	0.048	0.048	0.048	0.048	0.001	0.001
Benzo[a]pyrene	0.66	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	8.17	0.325	0.325	0.325	0.325	0.325	0.325	0.007	0.007
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.75	0.028	0.028	0.017	0.017	0.016	0.016	0.001	0.001
Ethylbenzene	0.59	0.022	0.022	0.004	0.004	0.004	0.004	0.001	0.001
Fluorene	0.91	0.003	0.003	0.001	0.001	0.001	0.001	0.001	0.001
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	50.62	0.807	0.806	0.516	0.516	0.516	0.516	0.094	0.094
Phenanthrene	3.06	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002
Phenol	0.25	0.015	0.015	0.010	0.010	0.007	0.007	0.002	0.002
Polychlorinated biphenyls	0.89	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	1.55	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
Toluene	1.01	0.040	0.040	0.029	0.029	0.027	0.027	0.001	0.001
Total mercury (methyl mercury for air emissions)	1.20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.22	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	29
Total dredge volume in cy:	381,000
Dredge cut in feet (either average or to max conc):	8.1
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,540
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	2		
Benzene	1.18	100		2.5E-02	2.0E-03	2.5E-02	2.0E-03
Benzo[a]pyrene	0.04	1,096,478		9.1E-04	7.1E-05	8.8E-04	7.1E-05
Chlorobenzene	0.01	500		2.9E-04	2.3E-05	2.9E-04	2.3E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		7.6E-04	6.0E-05	7.6E-04	6.0E-05
Ethylbenzene	0.02	588		3.8E-04	3.0E-05	3.8E-04	3.0E-05
Fluorene	0.04	15,136		7.8E-04	6.1E-05	7.7E-04	6.1E-05
Hexachlorobenzenes	0.00	1,513,561		4.9E-05	3.9E-06	4.8E-05	3.9E-06
Naphthalene	0.17	2,344		3.6E-03	2.9E-04	3.6E-03	2.9E-04
Phenanthrene	0.04	342,748		9.2E-04	7.3E-05	9.0E-04	7.3E-05
Phenol	0.16	100		3.4E-03	2.6E-04	3.4E-03	2.6E-04
Polychlorinated biphenyls	0.29	1,380,384		6.2E-03	4.8E-04	6.0E-03	4.8E-04
Pyrene	0.06	208,930		1.3E-03	1.0E-04	1.3E-03	1.0E-04
Toluene	0.15	490		3.3E-03	2.6E-04	3.3E-03	2.6E-04
Total mercury (methyl mercury for air emissions)	0.43	696,100	6,961	9.2E-03	7.3E-04	9.0E-03	7.3E-04
Trichlorobenzenes	0.04	18,197		7.6E-04	6.0E-05	7.6E-04	6.0E-05
Xylene isomers (total)	0.20	1,413		4.2E-03	3.4E-04	4.2E-03	3.4E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	29
Total dredge volume in cy:	381,000
Dredge cut in feet (either average or to max conc):	8.1
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,540
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	4.2E-02	4.2E-02
Chlorobenzene	1.4E-02	1.4E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.6E-02	3.6E-02
Ethylbenzene	1.8E-02	1.8E-02
Fluorene	3.6E-02	3.6E-02
Hexachlorobenzenes	2.3E-03	2.3E-03
Naphthalene	1.7E-01	1.7E-01
Phenanthrene	4.3E-02	4.3E-02
Phenol	1.6E-01	1.6E-01
Polychlorinated biphenyls	2.9E-01	2.9E-01
Pyrene	5.9E-02	5.9E-02
Toluene	1.5E-01	1.5E-01
Total mercury (methyl mercury for air emissions)	4.3E-01	4.3E-01
Trichlorobenzenes	3.5E-02	3.5E-02
Xylene isomers (total)	2.0E-01	2.0E-01

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	29
Total dredge volume in cy:	381,000
Dredge cut in feet (either average or to max conc):	8.1
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,540
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.18	1.2E+02	1.1E+02	1.1E+02	1.1E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	0.04	4.2E+00	1.9E-02	1.9E-02	2.9E-02	1.7E-02	1.6E-02
Chlorobenzene	0.01	1.4E+00	9.4E-01	9.2E-01	9.0E-01	9.4E-01	9.2E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.6E+00	1.1E+00	1.1E+00	1.1E+00	1.1E+00	1.1E+00
Ethylbenzene	0.02	1.8E+00	1.2E+00	1.1E+00	1.1E+00	1.2E+00	1.1E+00
Fluorene	0.04	3.6E+00	2.4E-01	2.4E-01	2.4E-01	2.4E-01	2.4E-01
Hexachlorobenzenes	0.00	2.3E-01	9.7E-04	9.5E-04	1.5E-03	8.4E-04	8.3E-04
Naphthalene	0.17	1.7E+01	5.3E+00	5.2E+00	5.1E+00	5.3E+00	5.2E+00
Phenanthrene	0.04	4.3E+00	2.8E-02	2.8E-02	3.8E-02	2.5E-02	2.5E-02
Phenol	0.16	1.6E+01	1.5E+01	1.5E+01	1.4E+01	1.5E+01	1.5E+01
Polychlorinated biphenyls	0.29	2.9E+01	1.2E-01	1.2E-01	1.9E-01	1.1E-01	1.1E-01
Pyrene	0.06	5.9E+00	5.0E-02	5.0E-02	6.3E-02	4.6E-02	4.6E-02
Toluene	0.15	1.5E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Total mercury (methyl mercury for air emissions)	0.43	4.3E+01	2.2E-01	2.2E-01	3.2E-01	1.9E-01	1.9E-01
Trichlorobenzenes	0.04	3.5E+00	2.0E-01	2.0E-01	2.0E-01	2.0E-01	2.0E-01
Xylene isomers (total)	0.20	2.0E+01	8.5E+00	8.4E+00	8.2E+00	8.5E+00	8.4E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	29
Total dredge volume in cy:	381,000
Dredge cut in feet (either average or to max conc):	8.1
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	2,540
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		122		4		3		3	
Benzene	1.18	0.134	0.134	0.104	0.104	0.104	0.104	0.003	0.003
Benzo[a]pyrene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.02	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.17	0.007	0.007	0.004	0.004	0.004	0.004	0.001	0.001
Phenanthrene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.16	0.018	0.018	0.011	0.011	0.008	0.008	0.002	0.002
Polychlorinated biphenyls	0.29	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.06	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.15	0.013	0.013	0.009	0.009	0.009	0.009	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.43	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.20	0.010	0.010	0.010	0.010	0.010	0.010	0.000	0.000

SMU (Insert Value: 1 through 7): 4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide I
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 75
Total dredge volume in cy: 2,170,000
Dredge cut in feet (either average or to max conc): 17.9
Post-dredge water depth (either average or to max conc.) in feet: 23.4

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 14,467

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 58%
Specific gravity: 2.6
TOC: 1.4%
In Situ Sediment Density (% solids by weight) 50%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 282 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,141,214

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				15	1		
Benzene	0.00	100		6.5E-05	3.2E-06	6.5E-05	3.2E-06
Benzo[a]pyrene	0.06	1,096,478		8.4E-04	4.1E-05	8.1E-04	4.1E-05
Chlorobenzene	0.01	500		1.4E-04	6.9E-06	1.4E-04	6.9E-06
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.07	2,399		1.0E-03	5.0E-05	1.0E-03	5.0E-05
Ethylbenzene	0.01	588		2.0E-04	1.0E-05	2.0E-04	1.0E-05
Fluorene	0.03	15,136		4.8E-04	2.4E-05	4.8E-04	2.4E-05
Hexachlorobenzenes	0.13	1,513,561		2.0E-03	9.8E-05	1.9E-03	9.8E-05
Naphthalene	0.04	2,344		5.9E-04	2.9E-05	5.9E-04	2.9E-05
Phenanthrene	0.13	342,748		1.9E-03	9.3E-05	1.9E-03	9.3E-05
Phenol	0.04	100		6.1E-04	3.0E-05	6.1E-04	3.0E-05
Polychlorinated biphenyls	0.56	1,380,384		8.5E-03	4.2E-04	8.2E-03	4.2E-04
Pyrene	0.20	208,930		3.0E-03	1.5E-04	2.9E-03	1.5E-04
Toluene	0.00	490		4.8E-05	2.3E-06	4.8E-05	2.3E-06
Total mercury (methyl mercury for air emissions)	32.06	497,214	6,961	4.8E-01	2.4E-02	4.7E-01	2.4E-02
Trichlorobenzenes	0.03	18,197		4.5E-04	2.2E-05	4.5E-04	2.2E-05
Xylene isomers (total)	0.26	1,413		3.9E-03	1.9E-04	3.9E-03	1.9E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	2,170,000
Dredge cut in feet (either average or to max conc):	17.9
Post-dredge water depth (either average or to max conc.) in feet:	23.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,467
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	4.3E-03	4.3E-03
Benzo[a]pyrene	5.6E-02	5.6E-02
Chlorobenzene	9.3E-03	9.3E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.8E-02	6.8E-02
Ethylbenzene	1.3E-02	1.3E-02
Fluorene	3.2E-02	3.2E-02
Hexachlorobenzenes	1.3E-01	1.3E-01
Naphthalene	3.9E-02	3.9E-02
Phenanthrene	1.3E-01	1.3E-01
Phenol	4.0E-02	4.0E-02
Polychlorinated biphenyls	5.6E-01	5.6E-01
Pyrene	2.0E-01	2.0E-01
Toluene	3.2E-03	3.2E-03
Total mercury (methyl mercury for air emissions)	3.2E+01	3.2E+01
Trichlorobenzenes	3.0E-02	3.0E-02
Xylene isomers (total)	2.6E-01	2.6E-01

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	2,170,000
Dredge cut in feet (either average or to max conc):	17.9
Post-dredge water depth (either average or to max conc.) in feet:	23.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,467
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	4.3E-01	3.9E-01	3.8E-01	3.8E-01	3.9E-01	3.8E-01
Benzo[a]pyrene	0.06	5.6E+00	1.3E-02	1.3E-02	2.7E-02	1.1E-02	1.1E-02
Chlorobenzene	0.01	9.3E-01	5.7E-01	5.5E-01	5.5E-01	5.7E-01	5.5E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.07	6.8E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Ethylbenzene	0.01	1.3E+00	7.7E-01	7.5E-01	7.4E-01	7.7E-01	7.5E-01
Fluorene	0.03	3.2E+00	1.5E-01	1.5E-01	1.6E-01	1.5E-01	1.5E-01
Hexachlorobenzenes	0.13	1.3E+01	2.9E-02	2.8E-02	6.3E-02	2.4E-02	2.3E-02
Naphthalene	0.04	3.9E+00	9.5E-01	9.3E-01	9.2E-01	9.5E-01	9.2E-01
Phenanthrene	0.13	1.3E+01	4.8E-02	4.7E-02	7.9E-02	4.2E-02	4.1E-02
Phenol	0.04	4.0E+00	3.7E+00	3.6E+00	3.5E+00	3.7E+00	3.6E+00
Polychlorinated biphenyls	0.56	5.6E+01	1.3E-01	1.3E-01	2.7E-01	1.0E-01	1.0E-01
Pyrene	0.20	2.0E+01	1.0E-01	1.0E-01	1.5E-01	9.1E-02	9.0E-02
Toluene	0.00	3.2E-01	2.0E-01	1.9E-01	1.9E-01	2.0E-01	1.9E-01
Total mercury (methyl mercury for air emissions)	32.06	3.2E+03	1.0E+01	1.0E+01	1.8E+01	8.7E+00	8.7E+00
Trichlorobenzenes	0.03	3.0E+00	1.2E-01	1.2E-01	1.2E-01	1.2E-01	1.2E-01
Xylene isomers (total)	0.26	2.6E+01	9.1E+00	8.9E+00	8.8E+00	9.1E+00	8.9E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	2,170,000
Dredge cut in feet (either average or to max conc):	17.9
Post-dredge water depth (either average or to max conc.) in feet:	23.4
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,467
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		50		2		1		1	
Benzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.06	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.07	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Ethylbenzene	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenanthrene	0.13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.56	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	0.20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total mercury (methyl mercury for air emissions)	32.06	0.029	0.026	0.026	0.026	0.026	0.026	0.025	0.025
Trichlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.26	0.005	0.005	0.005	0.005	0.005	0.005	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				31	3		
Benzene	0.00	100		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	2.8E-04	3.1E-03	2.8E-04
Chlorobenzene	0.00	500		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	1.0E-04	1.2E-03	1.0E-04
Ethylbenzene	0.00	588		1.2E-04	1.0E-05	1.2E-04	1.0E-05
Fluorene	0.05	15,136		1.7E-03	1.4E-04	1.6E-03	1.4E-04
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	2.0E-05	2.2E-04	2.0E-05
Naphthalene	0.14	2,344		4.2E-03	3.7E-04	4.2E-03	3.7E-04
Phenanthrene	0.14	342,748		4.4E-03	3.8E-04	4.2E-03	3.8E-04
Phenol	0.02	100		5.3E-04	4.6E-05	5.3E-04	4.6E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	6.7E-04	7.3E-03	6.6E-04
Pyrene	0.21	208,930		6.5E-03	5.6E-04	6.3E-03	5.6E-04
Toluene	0.02	490		6.5E-04	5.6E-05	6.5E-04	5.6E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	2.0E-03	2.2E-02	2.0E-03
Trichlorobenzenes	0.02	18,197		6.9E-04	6.0E-05	6.9E-04	6.0E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	1.0E-05	1.2E-04	1.0E-05

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.6E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.6E-01	2.6E-01	2.7E-01	2.6E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.5E-01	2.4E-01	2.5E-01	2.5E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.2E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.1E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.7E-01	1.3E-01	2.5E-01	2.5E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	3.8E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.1E-01
Toluene	0.02	2.1E+00	1.5E+00	1.5E+00	1.4E+00	1.5E+00	1.5E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.2E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	24
Total dredge volume in cy:	140,000
Dredge cut in feet (either average or to max conc):	4.3
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	933
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		167		6		4		4	
Benzene	0.00	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.008	0.007	0.005	0.005	0.005	0.005	0.001	0.001
Phenanthrene	0.14	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Phenol	0.02	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.02	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.004	0.003	0.003	0.003	0.003	0.003	0.002	0.002
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	123
Total dredge volume in cy:	3,447,000
Dredge cut in feet (either average or to max conc):	17.4
Post-dredge water depth (either average or to max conc.) in feet:	28
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	22,980
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				12	0		
Benzene	0.05	100		6.1E-04	2.3E-05	6.1E-04	2.3E-05
Benzo[a]pyrene	1.51	1,096,478		1.8E-02	6.9E-04	1.7E-02	6.9E-04
Chlorobenzene	0.17	500		2.0E-03	7.6E-05	2.0E-03	7.6E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.30	2,399		3.5E-03	1.4E-04	3.5E-03	1.4E-04
Ethylbenzene	0.76	588		9.0E-03	3.4E-04	9.0E-03	3.4E-04
Fluorene	1.50	15,136		1.8E-02	6.8E-04	1.8E-02	6.8E-04
Hexachlorobenzenes	0.01	1,513,561		1.4E-04	5.3E-06	1.3E-04	5.3E-06
Naphthalene	3.73	2,344		4.4E-02	1.7E-03	4.4E-02	1.7E-03
Phenanthrene	6.65	342,748		7.9E-02	3.0E-03	7.7E-02	3.0E-03
Phenol	0.10	100		1.2E-03	4.8E-05	1.2E-03	4.8E-05
Polychlorinated biphenyls	0.59	1,380,384		7.0E-03	2.7E-04	6.8E-03	2.7E-04
Pyrene	4.10	208,930		4.9E-02	1.9E-03	4.8E-02	1.9E-03
Toluene	0.06	490		7.3E-04	2.8E-05	7.3E-04	2.8E-05
Total mercury (methyl mercury for air emissions)	1.38	366,368	6,961	1.6E-02	6.3E-04	1.6E-02	6.3E-04
Trichlorobenzenes	0.26	18,197		3.1E-03	1.2E-04	3.1E-03	1.2E-04
Xylene isomers (total)	1.22	1,413		1.5E-02	5.6E-04	1.5E-02	5.6E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	123
Total dredge volume in cy:	3,447,000
Dredge cut in feet (either average or to max conc):	17.4
Post-dredge water depth (either average or to max conc.) in feet:	28
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	22,980
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	5.1E-02	5.1E-02
Benzo[a]pyrene	1.5E+00	1.5E+00
Chlorobenzene	1.7E-01	1.7E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.0E-01	3.0E-01
Ethylbenzene	7.6E-01	7.6E-01
Fluorene	1.5E+00	1.5E+00
Hexachlorobenzenes	1.2E-02	1.2E-02
Naphthalene	3.7E+00	3.7E+00
Phenanthrene	6.6E+00	6.6E+00
Phenol	1.0E-01	1.0E-01
Polychlorinated biphenyls	5.9E-01	5.9E-01
Pyrene	4.1E+00	4.1E+00
Toluene	6.1E-02	6.1E-02
Total mercury (methyl mercury for air emissions)	1.4E+00	1.4E+00
Trichlorobenzenes	2.6E-01	2.6E-01
Xylene isomers (total)	1.2E+00	1.2E+00

SMU (Insert Value: 1 through 7): 6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide I
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 123
Total dredge volume in cy: 3,447,000
Dredge cut in feet (either average or to max conc): 17.4
Post-dredge water depth (either average or to max conc.) in feet: 28

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 22,980

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 40%
Specific gravity: 2.6
TOC: 1.9%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 282 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,141,214

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.05	5.1E+00	4.5E+00	4.3E+00	4.3E+00	4.5E+00	4.3E+00
Benzo[a]pyrene	1.51	1.5E+02	4.5E-01	4.5E-01	5.5E-01	3.5E-01	3.5E-01
Chlorobenzene	0.17	1.7E+01	8.9E+00	8.6E+00	8.6E+00	8.9E+00	8.6E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.30	3.0E+01	5.6E+00	5.5E+00	5.4E+00	5.6E+00	5.5E+00
Ethylbenzene	0.76	7.6E+01	3.7E+01	3.6E+01	3.6E+01	3.7E+01	3.6E+01
Fluorene	1.50	1.5E+02	5.6E+00	5.4E+00	5.5E+00	5.4E+00	5.3E+00
Hexachlorobenzenes	0.01	1.2E+00	3.3E-03	3.2E-03	4.1E-03	2.6E-03	2.5E-03
Naphthalene	3.73	3.7E+02	7.2E+01	7.0E+01	6.9E+01	7.1E+01	6.9E+01
Phenanthrene	6.65	6.6E+02	2.7E+00	2.6E+00	3.1E+00	2.2E+00	2.2E+00
Phenol	0.10	1.0E+01	9.2E+00	9.1E+00	8.8E+00	9.2E+00	9.1E+00
Polychlorinated biphenyls	0.59	5.9E+01	1.7E-01	1.7E-01	2.1E-01	1.3E-01	1.3E-01
Pyrene	4.10	4.1E+02	2.1E+00	2.1E+00	2.3E+00	1.8E+00	1.8E+00
Toluene	0.06	6.1E+00	3.3E+00	3.2E+00	3.2E+00	3.3E+00	3.2E+00
Total mercury (methyl mercury for air emissions)	1.38	1.4E+02	5.5E-01	5.5E-01	6.3E-01	4.5E-01	4.5E-01
Trichlorobenzenes	0.26	2.6E+01	8.3E-01	8.1E-01	8.2E-01	8.1E-01	7.8E-01
Xylene isomers (total)	1.22	1.2E+02	3.5E+01	3.3E+01	3.3E+01	3.4E+01	3.3E+01

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	123
Total dredge volume in cy:	3,447,000
Dredge cut in feet (either average or to max conc):	17.4
Post-dredge water depth (either average or to max conc.) in feet:	28
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	22,980
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		33		1		1		1	
Benzene	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	1.51	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	0.17	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.30	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.76	0.012	0.012	0.002	0.002	0.002	0.002	0.001	0.001
Fluorene	1.50	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	3.73	0.024	0.024	0.016	0.016	0.016	0.016	0.003	0.003
Phenanthrene	6.65	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003
Phenol	0.10	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.59	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	4.10	0.003	0.002	0.003	0.003	0.002	0.002	0.002	0.002
Toluene	0.06	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	1.38	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.26	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	1.22	0.011	0.011	0.011	0.011	0.011	0.011	0.001	0.001

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative I, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide I
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 38
Total dredge volume in cy: 1,485,000
Dredge cut in feet (either average or to max conc): 24.2
Post-dredge water depth (either average or to max conc.) in feet: 25

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 9,900

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 282 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,141,214

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				11	1		
Benzene	0.39	100		4.3E-03	3.0E-04	4.3E-03	3.0E-04
Benzo[a]pyrene	1.58	1,096,478		1.8E-02	1.2E-03	1.7E-02	1.2E-03
Chlorobenzene	3.79	500		4.2E-02	2.9E-03	4.2E-02	2.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	2,399		1.8E-01	1.2E-02	1.7E-01	1.2E-02
Ethylbenzene	0.78	588		8.7E-03	6.0E-04	8.7E-03	6.0E-04
Fluorene	5.77	15,136		6.4E-02	4.4E-03	6.4E-02	4.4E-03
Hexachlorobenzenes	0.25	1,513,561		2.8E-03	1.9E-04	2.7E-03	1.9E-04
Naphthalene	22.84	2,344		2.6E-01	1.8E-02	2.6E-01	1.8E-02
Phenanthrene	13.65	342,748		1.5E-01	1.1E-02	1.5E-01	1.0E-02
Phenol	0.08	100		8.6E-04	5.9E-05	8.6E-04	5.9E-05
Polychlorinated biphenyls	0.98	1,380,384		1.1E-02	7.5E-04	1.1E-02	7.5E-04
Pyrene	5.80	208,930		6.5E-02	4.5E-03	6.4E-02	4.5E-03
Toluene	0.87	490		9.8E-03	6.7E-04	9.8E-03	6.7E-04
Total mercury (methyl mercury for air emissions)	7.93	409,471	6,961	8.9E-02	6.1E-03	8.7E-02	6.1E-03
Trichlorobenzenes	2.44	18,197		2.7E-02	1.9E-03	2.7E-02	1.9E-03
Xylene isomers (total)	4.22	1,413		4.7E-02	3.3E-03	4.7E-02	3.3E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	1,485,000
Dredge cut in feet (either average or to max conc):	24.2
Post-dredge water depth (either average or to max conc.) in feet:	25
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.9E-01	3.9E-01
Benzo[a]pyrene	1.6E+00	1.6E+00
Chlorobenzene	3.8E+00	3.8E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.6E+01	1.6E+01
Ethylbenzene	7.8E-01	7.8E-01
Fluorene	5.8E+00	5.8E+00
Hexachlorobenzenes	2.5E-01	2.5E-01
Naphthalene	2.3E+01	2.3E+01
Phenanthrene	1.4E+01	1.4E+01
Phenol	7.7E-02	7.7E-02
Polychlorinated biphenyls	9.8E-01	9.8E-01
Pyrene	5.8E+00	5.8E+00
Toluene	8.7E-01	8.7E-01
Total mercury (methyl mercury for air emissions)	7.9E+00	7.9E+00
Trichlorobenzenes	2.4E+00	2.4E+00
Xylene isomers (total)	4.2E+00	4.2E+00

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	1,485,000
Dredge cut in feet (either average or to max conc):	24.2
Post-dredge water depth (either average or to max conc.) in feet:	25
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.39	3.9E+01	3.5E+01	3.4E+01	3.3E+01	3.5E+01	3.4E+01
Benzo[a]pyrene	1.58	1.6E+02	4.1E-01	4.1E-01	6.4E-01	3.3E-01	3.3E-01
Chlorobenzene	3.79	3.8E+02	2.1E+02	2.1E+02	2.1E+02	2.1E+02	2.1E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	1.6E+03	3.2E+02	3.2E+02	3.1E+02	3.2E+02	3.2E+02
Ethylbenzene	0.78	7.8E+01	4.1E+01	4.0E+01	3.9E+01	4.1E+01	4.0E+01
Fluorene	5.77	5.8E+02	2.4E+01	2.3E+01	2.3E+01	2.3E+01	2.3E+01
Hexachlorobenzenes	0.25	2.5E+01	6.2E-02	6.1E-02	9.9E-02	4.9E-02	4.8E-02
Naphthalene	22.84	2.3E+03	4.8E+02	4.7E+02	4.6E+02	4.8E+02	4.7E+02
Phenanthrene	13.65	1.4E+03	5.2E+00	5.1E+00	7.1E+00	4.4E+00	4.3E+00
Phenol	0.08	7.7E+00	6.9E+00	6.9E+00	6.6E+00	6.9E+00	6.9E+00
Polychlorinated biphenyls	0.98	9.8E+01	2.4E-01	2.4E-01	3.9E-01	1.9E-01	1.9E-01
Pyrene	5.80	5.8E+02	2.9E+00	2.9E+00	3.7E+00	2.5E+00	2.5E+00
Toluene	0.87	8.7E+01	5.0E+01	4.9E+01	4.8E+01	5.0E+01	4.9E+01
Total mercury (methyl mercury for air emissions)	7.93	7.9E+02	2.8E+00	2.8E+00	3.9E+00	2.3E+00	2.3E+00
Trichlorobenzenes	2.44	2.4E+02	8.4E+00	8.3E+00	8.4E+00	8.2E+00	8.1E+00
Xylene isomers (total)	4.22	4.2E+02	1.3E+02	1.3E+02	1.2E+02	1.3E+02	1.3E+02

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide I
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	1,485,000
Dredge cut in feet (either average or to max conc):	24.2
Post-dredge water depth (either average or to max conc.) in feet:	25
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,900
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	282	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,141,214	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		66		2		1		1	
Benzene	0.39	0.023	0.023	0.017	0.017	0.017	0.017	0.000	0.000
Benzo[a]pyrene	1.58	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	3.79	0.141	0.141	0.141	0.141	0.141	0.141	0.003	0.003
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	0.222	0.221	0.135	0.135	0.128	0.128	0.013	0.013
Ethylbenzene	0.78	0.027	0.027	0.005	0.005	0.005	0.005	0.002	0.002
Fluorene	5.77	0.020	0.019	0.005	0.005	0.005	0.005	0.004	0.004
Hexachlorobenzenes	0.25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	22.84	0.327	0.327	0.210	0.210	0.210	0.210	0.039	0.039
Phenanthrene	13.65	0.014	0.012	0.014	0.014	0.011	0.011	0.010	0.010
Phenol	0.08	0.005	0.005	0.003	0.003	0.002	0.002	0.001	0.001
Polychlorinated biphenyls	0.98	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	5.80	0.006	0.006	0.006	0.006	0.004	0.004	0.004	0.004
Toluene	0.87	0.033	0.033	0.024	0.024	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	7.93	0.008	0.007	0.007	0.007	0.007	0.007	0.006	0.006
Trichlorobenzenes	2.44	0.007	0.007	0.006	0.006	0.005	0.005	0.003	0.003
Xylene isomers (total)	4.22	0.087	0.087	0.086	0.086	0.086	0.086	0.004	0.004

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				7	0		
Benzene	3.23	100		2.1E-02	9.9E-04	2.1E-02	9.9E-04
Benzo[a]pyrene	0.85	1,096,478		5.7E-03	2.6E-04	5.6E-03	2.6E-04
Chlorobenzene	11.64	500		7.7E-02	3.6E-03	7.7E-02	3.6E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	2,399		1.4E-01	6.4E-03	1.4E-01	6.4E-03
Ethylbenzene	3.85	588		2.6E-02	1.2E-03	2.6E-02	1.2E-03
Fluorene	5.30	15,136		3.5E-02	1.6E-03	3.5E-02	1.6E-03
Hexachlorobenzenes	0.14	1,513,561		9.6E-04	4.4E-05	9.4E-04	4.4E-05
Naphthalene	87.26	2,344		5.8E-01	2.7E-02	5.8E-01	2.7E-02
Phenanthrene	7.47	342,748		5.0E-02	2.3E-03	4.9E-02	2.3E-03
Phenol	3.39	100		2.3E-02	1.0E-03	2.3E-02	1.0E-03
Polychlorinated biphenyls	0.72	1,380,384		4.8E-03	2.2E-04	4.7E-03	2.2E-04
Pyrene	2.88	208,930		1.9E-02	8.9E-04	1.9E-02	8.9E-04
Toluene	8.39	490		5.6E-02	2.6E-03	5.6E-02	2.6E-03
Total mercury (methyl mercury for air emissions)	9.36	348,050	6,961	6.2E-02	2.9E-03	6.1E-02	2.9E-03
Trichlorobenzenes	5.79	18,197		3.9E-02	1.8E-03	3.8E-02	1.8E-03
Xylene isomers (total)	54.53	1,413		3.6E-01	1.7E-02	3.6E-01	1.7E-02

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.2E+00	3.2E+00
Benzo[a]pyrene	8.5E-01	8.5E-01
Chlorobenzene	1.2E+01	1.2E+01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.1E+01	2.1E+01
Ethylbenzene	3.8E+00	3.8E+00
Fluorene	5.3E+00	5.3E+00
Hexachlorobenzenes	1.4E-01	1.4E-01
Naphthalene	8.7E+01	8.7E+01
Phenanthrene	7.5E+00	7.5E+00
Phenol	3.4E+00	3.4E+00
Polychlorinated biphenyls	7.2E-01	7.2E-01
Pyrene	2.9E+00	2.9E+00
Toluene	8.4E+00	8.4E+00
Total mercury (methyl mercury for air emissions)	9.4E+00	9.4E+00
Trichlorobenzenes	5.8E+00	5.8E+00
Xylene isomers (total)	5.5E+01	5.5E+01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 1

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	3.23	3.2E+02	2.8E+02	2.7E+02	2.7E+02	2.8E+02	2.7E+02
Benzo[a]pyrene	0.85	8.5E+01	1.3E-01	1.3E-01	2.9E-01	1.0E-01	1.0E-01
Chlorobenzene	11.64	1.2E+03	6.1E+02	5.9E+02	5.8E+02	6.1E+02	5.9E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	2.1E+03	3.7E+02	3.7E+02	3.6E+02	3.7E+02	3.7E+02
Ethylbenzene	3.85	3.8E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02
Fluorene	5.30	5.3E+02	1.8E+01	1.8E+01	1.8E+01	1.8E+01	1.7E+01
Hexachlorobenzenes	0.14	1.4E+01	2.1E-02	2.0E-02	4.8E-02	1.6E-02	1.5E-02
Naphthalene	87.26	8.7E+03	1.6E+03	1.6E+03	1.6E+03	1.6E+03	1.6E+03
Phenanthrene	7.47	7.5E+02	1.9E+00	1.9E+00	3.3E+00	1.6E+00	1.5E+00
Phenol	3.39	3.4E+02	3.0E+02	2.9E+02	2.8E+02	3.0E+02	2.9E+02
Polychlorinated biphenyls	0.72	7.2E+01	1.1E-01	1.1E-01	2.4E-01	8.1E-02	8.1E-02
Pyrene	2.88	2.9E+02	1.0E+00	1.0E+00	1.5E+00	8.7E-01	8.5E-01
Toluene	8.39	8.4E+02	4.4E+02	4.3E+02	4.2E+02	4.4E+02	4.3E+02
Total mercury (methyl mercury for air emissions)	9.36	9.4E+02	2.4E+00	2.4E+00	4.1E+00	2.0E+00	2.0E+00
Trichlorobenzenes	5.79	5.8E+02	1.7E+01	1.6E+01	1.7E+01	1.6E+01	1.6E+01
Xylene isomers (total)	54.53	5.5E+03	1.5E+03	1.4E+03	1.4E+03	1.5E+03	1.4E+03

SMU (Insert Value: 1 through 7):	1
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	84
Total dredge volume in cy:	4,028,000
Dredge cut in feet (either average or to max conc):	29.7
Post-dredge water depth (either average or to max conc.) in feet:	39.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	26,853
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	92%
Specific gravity:	2.36
TOC:	2.0%
In Situ Sediment Density (% solids by weight)	41%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		28		1		1		1	
Benzene	3.23	0.077	0.077	0.060	0.060	0.060	0.060	0.001	0.001
Benzo[a]pyrene	0.85	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	11.64	0.169	0.169	0.169	0.169	0.169	0.169	0.004	0.004
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	20.74	0.110	0.110	0.067	0.067	0.063	0.063	0.007	0.007
Ethylbenzene	3.85	0.051	0.051	0.009	0.009	0.009	0.009	0.003	0.003
Fluorene	5.30	0.007	0.007	0.002	0.002	0.002	0.002	0.002	0.002
Hexachlorobenzenes	0.14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	87.26	0.464	0.463	0.298	0.298	0.298	0.298	0.058	0.058
Phenanthrene	7.47	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
Phenol	3.39	0.083	0.083	0.053	0.053	0.037	0.037	0.010	0.010
Polychlorinated biphenyls	0.72	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	2.88	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	8.39	0.123	0.123	0.089	0.089	0.082	0.082	0.003	0.003
Total mercury (methyl mercury for air emissions)	9.36	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Trichlorobenzenes	5.79	0.006	0.006	0.006	0.006	0.004	0.004	0.002	0.002
Xylene isomers (total)	54.53	0.421	0.421	0.417	0.417	0.417	0.417	0.019	0.019

SMU (Insert Value: 1 through 7): 2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide J
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 34
Total dredge volume in cy: 1,016,000
Dredge cut in feet (either average or to max conc): 18.5
Post-dredge water depth (either average or to max conc.) in feet: 38

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 6,773

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 98%
Specific gravity: 2.52
TOC: 1.5%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 442 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,788,711

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				7	1		
Benzene	1.20	100		9.0E-03	6.5E-04	9.0E-03	6.5E-04
Benzo[a]pyrene	0.77	1,096,478		5.8E-03	4.2E-04	5.7E-03	4.2E-04
Chlorobenzene	9.53	500		7.1E-02	5.2E-03	7.1E-02	5.2E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.04	2,399		1.5E-02	1.1E-03	1.5E-02	1.1E-03
Ethylbenzene	0.69	588		5.1E-03	3.7E-04	5.1E-03	3.7E-04
Fluorene	1.05	15,136		7.9E-03	5.7E-04	7.9E-03	5.7E-04
Hexachlorobenzenes	0.01	1,513,561		7.7E-05	5.6E-06	7.5E-05	5.6E-06
Naphthalene	59.06	2,344		4.4E-01	3.2E-02	4.4E-01	3.2E-02
Phenanthrene	3.56	342,748		2.7E-02	1.9E-03	2.6E-02	1.9E-03
Phenol	0.28	100		2.1E-03	1.5E-04	2.1E-03	1.5E-04
Polychlorinated biphenyls	0.99	1,380,384		7.4E-03	5.4E-04	7.2E-03	5.4E-04
Pyrene	1.80	208,930		1.3E-02	9.8E-04	1.3E-02	9.8E-04
Toluene	1.17	490		8.8E-03	6.4E-04	8.8E-03	6.4E-04
Total mercury (methyl mercury for air emissions)	1.37	464,067	6,961	1.0E-02	7.5E-04	1.0E-02	7.5E-04
Trichlorobenzenes	0.26	18,197		1.9E-03	1.4E-04	1.9E-03	1.4E-04
Xylene isomers (total)	7.70	1,413		5.8E-02	4.2E-03	5.8E-02	4.2E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	34
Total dredge volume in cy:	1,016,000
Dredge cut in feet (either average or to max conc):	18.5
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	6,773
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	7.7E-01	7.7E-01
Chlorobenzene	9.5E+00	9.5E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.0E+00	2.0E+00
Ethylbenzene	6.9E-01	6.9E-01
Fluorene	1.1E+00	1.1E+00
Hexachlorobenzenes	1.0E-02	1.0E-02
Naphthalene	5.9E+01	5.9E+01
Phenanthrene	3.6E+00	3.6E+00
Phenol	2.8E-01	2.8E-01
Polychlorinated biphenyls	9.9E-01	9.9E-01
Pyrene	1.8E+00	1.8E+00
Toluene	1.2E+00	1.2E+00
Total mercury (methyl mercury for air emissions)	1.4E+00	1.4E+00
Trichlorobenzenes	2.6E-01	2.6E-01
Xylene isomers (total)	7.7E+00	7.7E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 2

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	34
Total dredge volume in cy:	1,016,000
Dredge cut in feet (either average or to max conc):	18.5
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	6,773
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.20	1.2E+02	1.1E+02	1.1E+02	1.0E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	0.77	7.7E+01	1.3E-01	1.3E-01	3.5E-01	1.0E-01	1.0E-01
Chlorobenzene	9.53	9.5E+02	5.7E+02	5.6E+02	5.5E+02	5.7E+02	5.6E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.04	2.0E+02	4.6E+01	4.6E+01	4.5E+01	4.6E+01	4.6E+01
Ethylbenzene	0.69	6.9E+01	3.8E+01	3.7E+01	3.6E+01	3.8E+01	3.7E+01
Fluorene	1.05	1.1E+02	4.7E+00	4.6E+00	4.8E+00	4.6E+00	4.5E+00
Hexachlorobenzenes	0.01	1.0E+00	1.5E-03	1.5E-03	4.5E-03	1.2E-03	1.2E-03
Naphthalene	59.06	5.9E+03	1.4E+03	1.3E+03	1.3E+03	1.4E+03	1.3E+03
Phenanthrene	3.56	3.6E+02	1.1E+00	1.1E+00	2.1E+00	9.3E-01	9.0E-01
Phenol	0.28	2.8E+01	2.6E+01	2.6E+01	2.5E+01	2.6E+01	2.6E+01
Polychlorinated biphenyls	0.99	9.9E+01	1.5E-01	1.5E-01	4.4E-01	1.2E-01	1.2E-01
Pyrene	1.80	1.8E+02	7.8E-01	7.7E-01	1.3E+00	6.8E-01	6.8E-01
Toluene	1.17	1.2E+02	7.0E+01	6.9E+01	6.8E+01	7.0E+01	6.9E+01
Total mercury (methyl mercury for air emissions)	1.37	1.4E+02	3.4E-01	3.4E-01	7.4E-01	2.9E-01	2.9E-01
Trichlorobenzenes	0.26	2.6E+01	9.6E-01	9.5E-01	1.0E+00	9.4E-01	9.2E-01
Xylene isomers (total)	7.70	7.7E+02	2.6E+02	2.5E+02	2.5E+02	2.6E+02	2.5E+02

SMU (Insert Value: 1 through 7):	2
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-6
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	34
Total dredge volume in cy:	1,016,000
Dredge cut in feet (either average or to max conc):	18.5
Post-dredge water depth (either average or to max conc.) in feet:	38
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	6,773
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	98%
Specific gravity:	2.52
TOC:	1.5%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		46		1		1		1	
Benzene	1.20	0.049	0.049	0.038	0.038	0.038	0.038	0.001	0.001
Benzo[a]pyrene	0.77	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	9.53	0.259	0.259	0.259	0.259	0.259	0.259	0.006	0.006
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.04	0.022	0.022	0.013	0.013	0.013	0.013	0.001	0.001
Ethylbenzene	0.69	0.017	0.017	0.003	0.003	0.003	0.003	0.001	0.001
Fluorene	1.05	0.003	0.003	0.001	0.001	0.001	0.001	0.001	0.001
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	59.06	0.643	0.642	0.411	0.411	0.411	0.411	0.075	0.075
Phenanthrene	3.56	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Phenol	0.28	0.012	0.012	0.008	0.008	0.005	0.005	0.001	0.001
Polychlorinated biphenyls	0.99	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	1.80	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	1.17	0.032	0.032	0.023	0.023	0.022	0.022	0.001	0.001
Total mercury (methyl mercury for air emissions)	1.37	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.26	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	7.70	0.119	0.119	0.118	0.118	0.118	0.118	0.005	0.005

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	113
Total dredge volume in cy:	1,427,000
Dredge cut in feet (either average or to max conc):	7.8
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,513
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	Koc (mL/g)*	Kd (mL/g)	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				22	1		
Benzene	1.18	100		2.5E-02	1.0E-03	2.5E-02	1.0E-03
Benzo[a]pyrene	0.04	1,096,478		9.1E-04	3.6E-05	8.8E-04	3.6E-05
Chlorobenzene	0.01	500		2.9E-04	1.2E-05	2.9E-04	1.2E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		7.6E-04	3.1E-05	7.6E-04	3.1E-05
Ethylbenzene	0.02	588		3.8E-04	1.5E-05	3.8E-04	1.5E-05
Fluorene	0.04	15,136		7.8E-04	3.1E-05	7.7E-04	3.1E-05
Hexachlorobenzenes	0.00	1,513,561		4.9E-05	2.0E-06	4.8E-05	2.0E-06
Naphthalene	0.17	2,344		3.6E-03	1.5E-04	3.6E-03	1.5E-04
Phenanthrene	0.04	342,748		9.2E-04	3.7E-05	9.0E-04	3.7E-05
Phenol	0.16	100		3.4E-03	1.3E-04	3.4E-03	1.3E-04
Polychlorinated biphenyls	0.29	1,380,384		6.2E-03	2.5E-04	6.0E-03	2.5E-04
Pyrene	0.06	208,930		1.3E-03	5.1E-05	1.3E-03	5.1E-05
Toluene	0.15	490		3.3E-03	1.3E-04	3.3E-03	1.3E-04
Total mercury (methyl mercury for air emissions)	0.43	696,100	6,961	9.2E-03	3.7E-04	9.0E-03	3.7E-04
Trichlorobenzenes	0.04	18,197		7.6E-04	3.0E-05	7.6E-04	3.0E-05
Xylene isomers (total)	0.20	1,413		4.2E-03	1.7E-04	4.2E-03	1.7E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	113
Total dredge volume in cy:	1,427,000
Dredge cut in feet (either average or to max conc):	7.8
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,513
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	1.2E+00	1.2E+00
Benzo[a]pyrene	4.2E-02	4.2E-02
Chlorobenzene	1.4E-02	1.4E-02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.6E-02	3.6E-02
Ethylbenzene	1.8E-02	1.8E-02
Fluorene	3.6E-02	3.6E-02
Hexachlorobenzenes	2.3E-03	2.3E-03
Naphthalene	1.7E-01	1.7E-01
Phenanthrene	4.3E-02	4.3E-02
Phenol	1.6E-01	1.6E-01
Polychlorinated biphenyls	2.9E-01	2.9E-01
Pyrene	5.9E-02	5.9E-02
Toluene	1.5E-01	1.5E-01
Total mercury (methyl mercury for air emissions)	4.3E-01	4.3E-01
Trichlorobenzenes	3.5E-02	3.5E-02
Xylene isomers (total)	2.0E-01	2.0E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide J
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 113
Total dredge volume in cy: 1,427,000
Dredge cut in feet (either average or to max conc): 7.8
Post-dredge water depth (either average or to max conc.) in feet: 15.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 9,513

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 28%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 442 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,788,711

Avg Sed Specific gravity 2.5

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	1.18	1.2E+02	1.1E+02	1.1E+02	1.1E+02	1.1E+02	1.1E+02
Benzo[a]pyrene	0.04	4.2E+00	1.9E-02	1.9E-02	2.9E-02	1.7E-02	1.6E-02
Chlorobenzene	0.01	1.4E+00	9.4E-01	9.1E-01	9.0E-01	9.4E-01	9.1E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.6E+00	1.1E+00	1.1E+00	1.1E+00	1.1E+00	1.1E+00
Ethylbenzene	0.02	1.8E+00	1.2E+00	1.1E+00	1.1E+00	1.2E+00	1.1E+00
Fluorene	0.04	3.6E+00	2.4E-01	2.4E-01	2.4E-01	2.4E-01	2.3E-01
Hexachlorobenzenes	0.00	2.3E-01	9.7E-04	9.4E-04	1.5E-03	8.4E-04	8.1E-04
Naphthalene	0.17	1.7E+01	5.3E+00	5.1E+00	5.1E+00	5.3E+00	5.1E+00
Phenanthrene	0.04	4.3E+00	2.8E-02	2.7E-02	3.8E-02	2.5E-02	2.4E-02
Phenol	0.16	1.6E+01	1.5E+01	1.5E+01	1.4E+01	1.5E+01	1.5E+01
Polychlorinated biphenyls	0.29	2.9E+01	1.2E-01	1.2E-01	1.9E-01	1.1E-01	1.1E-01
Pyrene	0.06	5.9E+00	5.0E-02	5.0E-02	6.3E-02	4.6E-02	4.6E-02
Toluene	0.15	1.5E+01	1.1E+01	1.0E+01	1.0E+01	1.1E+01	1.0E+01
Total mercury (methyl mercury for air emissions)	0.43	4.3E+01	2.2E-01	2.2E-01	3.2E-01	1.9E-01	1.9E-01
Trichlorobenzenes	0.04	3.5E+00	2.0E-01	2.0E-01	2.0E-01	2.0E-01	1.9E-01
Xylene isomers (total)	0.20	2.0E+01	8.5E+00	8.3E+00	8.2E+00	8.5E+00	8.2E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 3

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	3
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-3
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	113
Total dredge volume in cy:	1,427,000
Dredge cut in feet (either average or to max conc):	7.8
Post-dredge water depth (either average or to max conc.) in feet:	15.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	9,513
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	28%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		62		2		1		1	
Benzene	1.18	0.067	0.067	0.052	0.052	0.052	0.052	0.001	0.001
Benzo[a]pyrene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Ethylbenzene	0.02	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.17	0.003	0.003	0.002	0.002	0.002	0.002	0.000	0.000
Phenanthrene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.16	0.009	0.009	0.006	0.006	0.004	0.004	0.001	0.001
Polychlorinated biphenyls	0.29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	0.06	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.15	0.006	0.006	0.005	0.005	0.004	0.004	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.43	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trichlorobenzenes	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.20	0.005	0.005	0.005	0.005	0.005	0.005	0.000	0.000

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	3,563,000
Dredge cut in feet (either average or to max conc):	29.4
Post-dredge water depth (either average or to max conc.) in feet:	33.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	23,753
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				11	1		
Benzene	0.00	100		4.0E-05	2.0E-06	4.0E-05	2.0E-06
Benzo[a]pyrene	0.05	1,096,478		5.6E-04	2.7E-05	5.5E-04	2.7E-05
Chlorobenzene	0.01	500		8.6E-05	4.2E-06	8.6E-05	4.2E-06
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.06	2,399		6.7E-04	3.3E-05	6.7E-04	3.3E-05
Ethylbenzene	0.01	588		1.2E-04	6.1E-06	1.2E-04	6.1E-06
Fluorene	0.03	15,136		3.5E-04	1.7E-05	3.5E-04	1.7E-05
Hexachlorobenzenes	0.11	1,513,561		1.2E-03	5.9E-05	1.2E-03	5.9E-05
Naphthalene	0.04	2,344		4.1E-04	2.0E-05	4.1E-04	2.0E-05
Phenanthrene	0.13	342,748		1.4E-03	6.9E-05	1.4E-03	6.9E-05
Phenol	0.04	100		4.2E-04	2.1E-05	4.2E-04	2.1E-05
Polychlorinated biphenyls	0.51	1,380,384		5.4E-03	2.7E-04	5.3E-03	2.7E-04
Pyrene	0.20	208,930		2.2E-03	1.1E-04	2.1E-03	1.1E-04
Toluene	0.00	490		3.1E-05	1.5E-06	3.1E-05	1.5E-06
Total mercury (methyl mercury for air emissions)	27.51	497,214	6,961	2.9E-01	1.4E-02	2.9E-01	1.4E-02
Trichlorobenzenes	0.03	18,197		3.3E-04	1.6E-05	3.3E-04	1.6E-05
Xylene isomers (total)	0.22	1,413		2.4E-03	1.2E-04	2.4E-03	1.2E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	3,563,000
Dredge cut in feet (either average or to max conc):	29.4
Post-dredge water depth (either average or to max conc.) in feet:	33.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	23,753
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	5.3E-02	5.3E-02
Chlorobenzene	8.1E-03	8.1E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	6.4E-02	6.4E-02
Ethylbenzene	1.2E-02	1.2E-02
Fluorene	3.3E-02	3.3E-02
Hexachlorobenzenes	1.1E-01	1.1E-01
Naphthalene	3.9E-02	3.9E-02
Phenanthrene	1.3E-01	1.3E-01
Phenol	4.0E-02	4.0E-02
Polychlorinated biphenyls	5.1E-01	5.1E-01
Pyrene	2.0E-01	2.0E-01
Toluene	2.9E-03	2.9E-03
Total mercury (methyl mercury for air emissions)	2.8E+01	2.8E+01
Trichlorobenzenes	3.1E-02	3.1E-02
Xylene isomers (total)	2.2E-01	2.2E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 4

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	3,563,000
Dredge cut in feet (either average or to max conc):	29.4
Post-dredge water depth (either average or to max conc.) in feet:	33.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	23,753
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.4E-01	3.3E-01	3.3E-01	3.4E-01	3.3E-01
Benzo[a]pyrene	0.05	5.3E+00	1.3E-02	1.3E-02	2.6E-02	1.1E-02	1.1E-02
Chlorobenzene	0.01	8.1E-01	5.0E-01	4.9E-01	4.8E-01	5.0E-01	4.8E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.06	6.4E+00	1.5E+00	1.5E+00	1.5E+00	1.5E+00	1.5E+00
Ethylbenzene	0.01	1.2E+00	6.7E-01	6.5E-01	6.4E-01	6.7E-01	6.5E-01
Fluorene	0.03	3.3E+00	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.5E-01
Hexachlorobenzenes	0.11	1.1E+01	2.5E-02	2.4E-02	5.4E-02	2.1E-02	2.0E-02
Naphthalene	0.04	3.9E+00	9.5E-01	9.3E-01	9.2E-01	9.4E-01	9.2E-01
Phenanthrene	0.13	1.3E+01	5.2E-02	5.0E-02	8.5E-02	4.5E-02	4.3E-02
Phenol	0.04	4.0E+00	3.6E+00	3.6E+00	3.5E+00	3.6E+00	3.6E+00
Polychlorinated biphenyls	0.51	5.1E+01	1.2E-01	1.2E-01	2.5E-01	9.6E-02	9.6E-02
Pyrene	0.20	2.0E+01	1.1E-01	1.1E-01	1.6E-01	9.5E-02	9.4E-02
Toluene	0.00	2.9E-01	1.8E-01	1.7E-01	1.7E-01	1.8E-01	1.7E-01
Total mercury (methyl mercury for air emissions)	27.51	2.8E+03	8.8E+00	8.8E+00	1.6E+01	7.5E+00	7.5E+00
Trichlorobenzenes	0.03	3.1E+00	1.3E-01	1.2E-01	1.3E-01	1.2E-01	1.2E-01
Xylene isomers (total)	0.22	2.2E+01	7.8E+00	7.6E+00	7.6E+00	7.8E+00	7.6E+00

SMU (Insert Value: 1 through 7):	4
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	75
Total dredge volume in cy:	3,563,000
Dredge cut in feet (either average or to max conc):	29.4
Post-dredge water depth (either average or to max conc.) in feet:	33.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	23,753
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	58%
Specific gravity:	2.6
TOC:	1.4%
In Situ Sediment Density (% solids by weight)	50%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		35		1		1		1	
Benzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.06	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Ethylbenzene	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenanthrene	0.13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.04	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	0.20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total mercury (methyl mercury for air emissions)	27.51	0.017	0.016	0.016	0.016	0.015	0.015	0.015	0.015
Trichlorobenzenes	0.03	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.22	0.003	0.003	0.003	0.003	0.003	0.003	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide J
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 108
Total dredge volume in cy: 610,000
Dredge cut in feet (either average or to max conc): 5
Post-dredge water depth (either average or to max conc.) in feet: 12.5

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 4,067

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 6%
Specific gravity: 2.6
TOC: 1.0%
In Situ Sediment Density (% solids by weight) 53%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 442 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,788,711

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
		Koc (mL/g)*	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				31	1		
Benzene	0.00	100		1.2E-04	4.7E-06	1.2E-04	4.7E-06
Benzo[a]pyrene	0.10	1,096,478		3.2E-03	1.3E-04	3.1E-03	1.3E-04
Chlorobenzene	0.00	500		1.2E-04	4.8E-06	1.2E-04	4.8E-06
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	2,399		1.2E-03	4.8E-05	1.2E-03	4.8E-05
Ethylbenzene	0.00	588		1.2E-04	4.7E-06	1.2E-04	4.7E-06
Fluorene	0.05	15,136		1.7E-03	6.8E-05	1.6E-03	6.8E-05
Hexachlorobenzenes	0.01	1,513,561		2.3E-04	9.3E-06	2.2E-04	9.3E-06
Naphthalene	0.14	2,344		4.2E-03	1.7E-04	4.2E-03	1.7E-04
Phenanthrene	0.14	342,748		4.4E-03	1.8E-04	4.2E-03	1.8E-04
Phenol	0.02	100		5.3E-04	2.2E-05	5.3E-04	2.2E-05
Polychlorinated biphenyls	0.25	1,380,384		7.7E-03	3.1E-04	7.3E-03	3.1E-04
Pyrene	0.21	208,930		6.5E-03	2.7E-04	6.3E-03	2.7E-04
Toluene	0.02	490		6.5E-04	2.6E-05	6.5E-04	2.6E-05
Total mercury (methyl mercury for air emissions)	0.74	696,100	6,961	2.3E-02	9.3E-04	2.2E-02	9.3E-04
Trichlorobenzenes	0.02	18,197		6.9E-04	2.8E-05	6.9E-04	2.8E-05
Xylene isomers (total)	0.00	1,413		1.2E-04	4.8E-06	1.2E-04	4.8E-06

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	108
Total dredge volume in cy:	610,000
Dredge cut in feet (either average or to max conc):	5
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	4,067
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.8E-03	3.8E-03
Benzo[a]pyrene	1.0E-01	1.0E-01
Chlorobenzene	3.9E-03	3.9E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	3.8E-02	3.8E-02
Ethylbenzene	3.8E-03	3.8E-03
Fluorene	5.4E-02	5.4E-02
Hexachlorobenzenes	7.4E-03	7.4E-03
Naphthalene	1.4E-01	1.4E-01
Phenanthrene	1.4E-01	1.4E-01
Phenol	1.7E-02	1.7E-02
Polychlorinated biphenyls	2.5E-01	2.5E-01
Pyrene	2.1E-01	2.1E-01
Toluene	2.1E-02	2.1E-02
Total mercury (methyl mercury for air emissions)	7.4E-01	7.4E-01
Trichlorobenzenes	2.2E-02	2.2E-02
Xylene isomers (total)	3.8E-03	3.8E-03

Attachment D - Predicted Water Quality Impacts Associated with Dredging
Alternative J, SMU 5
Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	108
Total dredge volume in cy:	610,000
Dredge cut in feet (either average or to max conc):	5
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	4,067
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.00	3.8E-01	3.6E-01	3.5E-01	3.4E-01	3.6E-01	3.5E-01
Benzo[a]pyrene	0.10	1.0E+01	1.8E-01	1.8E-01	7.2E-02	1.6E-01	1.6E-01
Chlorobenzene	0.00	3.9E-01	2.7E-01	2.6E-01	2.6E-01	2.7E-01	2.6E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	3.8E+00	1.2E+00	1.2E+00	1.1E+00	1.2E+00	1.2E+00
Ethylbenzene	0.00	3.8E-01	2.5E-01	2.4E-01	2.4E-01	2.5E-01	2.4E-01
Fluorene	0.05	5.4E+00	4.3E-01	4.2E-01	3.6E-01	4.2E-01	4.1E-01
Hexachlorobenzenes	0.01	7.4E-01	1.3E-02	1.3E-02	4.9E-03	1.1E-02	1.1E-02
Naphthalene	0.14	1.4E+01	4.4E+00	4.3E+00	4.1E+00	4.4E+00	4.3E+00
Phenanthrene	0.14	1.4E+01	2.8E-01	2.7E-01	1.3E-01	2.5E-01	2.4E-01
Phenol	0.02	1.7E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00	1.6E+00
Polychlorinated biphenyls	0.25	2.5E+01	4.3E-01	4.3E-01	1.7E-01	3.8E-01	3.8E-01
Pyrene	0.21	2.1E+01	4.5E-01	4.5E-01	2.3E-01	4.1E-01	4.1E-01
Toluene	0.02	2.1E+00	1.5E+00	1.4E+00	1.4E+00	1.5E+00	1.4E+00
Total mercury (methyl mercury for air emissions)	0.74	7.4E+01	1.3E+00	1.3E+00	5.5E-01	1.2E+00	1.2E+00
Trichlorobenzenes	0.02	2.2E+00	1.6E-01	1.5E-01	1.3E-01	1.5E-01	1.5E-01
Xylene isomers (total)	0.00	3.8E-01	1.7E-01	1.6E-01	1.6E-01	1.7E-01	1.6E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 5

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	5
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-2
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	108
Total dredge volume in cy:	610,000
Dredge cut in feet (either average or to max conc):	5
Post-dredge water depth (either average or to max conc.) in feet:	12.5
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	4,067
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	6%
Specific gravity:	2.6
TOC:	1.0%
In Situ Sediment Density (% solids by weight)	53%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		78		3		2		2	
Benzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Benzo[a]pyrene	0.10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.04	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fluorene	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	0.14	0.003	0.003	0.002	0.002	0.002	0.002	0.000	0.000
Phenanthrene	0.14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenol	0.02	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.25	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	0.21	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Toluene	0.02	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Total mercury (methyl mercury for air emissions)	0.74	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorobenzenes	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SMU (Insert Value: 1 through 7): 6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide J
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 156
Total dredge volume in cy: 7,309,000
Dredge cut in feet (either average or to max conc): 29
Post-dredge water depth (either average or to max conc.) in feet: 37

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 48,727

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 40%
Specific gravity: 2.6
TOC: 1.9%
In Situ Sediment Density (% solids by weight) 48%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 442 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,788,711

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

		Partitioning Coefficients		Average Total Water Quality Constituent Concentration in ug/L		Average Dissolved Water Quality Constituent Concentration in ug/L	
Analyte	Sediment concentration of dredged material in mg/kg	**Koc (mL/g)***	**Kd (mL/g)**	Around Dredge (1)	Over Dredging Area in SMU	Around Dredge (1)	Over Dredging Area in SMU
Total suspended solids (mg/L)				9	0		
Benzene	0.04	100		3.6E-04	1.2E-05	3.6E-04	1.2E-05
Benzo[a]pyrene	1.16	1,096,478		1.0E-02	3.6E-04	1.0E-02	3.6E-04
Chlorobenzene	0.13	500		1.1E-03	3.9E-05	1.1E-03	3.9E-05
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.23	2,399		2.1E-03	7.1E-05	2.1E-03	7.1E-05
Ethylbenzene	0.57	588		5.1E-03	1.7E-04	5.1E-03	1.7E-04
Fluorene	1.13	15,136		1.0E-02	3.5E-04	1.0E-02	3.5E-04
Hexachlorobenzenes	0.01	1,513,561		8.0E-05	2.7E-06	7.8E-05	2.7E-06
Naphthalene	2.81	2,344		2.5E-02	8.6E-04	2.5E-02	8.6E-04
Phenanthrene	5.03	342,748		4.5E-02	1.5E-03	4.5E-02	1.5E-03
Phenol	0.09	100		7.8E-04	2.6E-05	7.8E-04	2.6E-05
Polychlorinated biphenyls	0.51	1,380,384		4.6E-03	1.6E-04	4.5E-03	1.6E-04
Pyrene	3.14	208,930		2.8E-02	9.6E-04	2.8E-02	9.6E-04
Toluene	0.05	490		4.2E-04	1.4E-05	4.2E-04	1.4E-05
Total mercury (methyl mercury for air emissions)	1.09	366,368	6,961	9.8E-03	3.3E-04	9.6E-03	3.3E-04
Trichlorobenzenes	0.20	18,197		1.8E-03	6.3E-05	1.8E-03	6.3E-05
Xylene isomers (total)	0.92	1,413		8.3E-03	2.8E-04	8.3E-03	2.8E-04

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	156
Total dredge volume in cy:	7,309,000
Dredge cut in feet (either average or to max conc):	29
Post-dredge water depth (either average or to max conc.) in feet:	37
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	48,727
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.9E-02	3.9E-02
Benzo[a]pyrene	1.2E+00	1.2E+00
Chlorobenzene	1.3E-01	1.3E-01
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	2.3E-01	2.3E-01
Ethylbenzene	5.7E-01	5.7E-01
Fluorene	1.1E+00	1.1E+00
Hexachlorobenzenes	8.8E-03	8.8E-03
Naphthalene	2.8E+00	2.8E+00
Phenanthrene	5.0E+00	5.0E+00
Phenol	8.6E-02	8.6E-02
Polychlorinated biphenyls	5.1E-01	5.1E-01
Pyrene	3.1E+00	3.1E+00
Toluene	4.7E-02	4.7E-02
Total mercury (methyl mercury for air emissions)	1.1E+00	1.1E+00
Trichlorobenzenes	2.0E-01	2.0E-01
Xylene isomers (total)	9.2E-01	9.2E-01

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 6

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	156
Total dredge volume in cy:	7,309,000
Dredge cut in feet (either average or to max conc):	29
Post-dredge water depth (either average or to max conc.) in feet:	37
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	48,727
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization	Average Dissolved Water Quality Constituent Concentration in ug/L: Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.04	3.9E+00	3.4E+00	3.3E+00	3.3E+00	3.4E+00	3.3E+00
Benzo[a]pyrene	1.16	1.2E+02	3.5E-01	3.5E-01	4.2E-01	2.7E-01	2.7E-01
Chlorobenzene	0.13	1.3E+01	6.7E+00	6.5E+00	6.5E+00	6.7E+00	6.5E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.23	2.3E+01	4.3E+00	4.3E+00	4.2E+00	4.3E+00	4.3E+00
Ethylbenzene	0.57	5.7E+01	2.8E+01	2.7E+01	2.7E+01	2.8E+01	2.7E+01
Fluorene	1.13	1.1E+02	4.2E+00	4.1E+00	4.1E+00	4.1E+00	4.0E+00
Hexachlorobenzenes	0.01	8.8E-01	2.5E-03	2.5E-03	3.1E-03	2.0E-03	1.9E-03
Naphthalene	2.81	2.8E+02	5.4E+01	5.2E+01	5.2E+01	5.4E+01	5.2E+01
Phenanthrene	5.03	5.0E+02	2.1E+00	2.0E+00	2.4E+00	1.7E+00	1.6E+00
Phenol	0.09	8.6E+00	7.5E+00	7.5E+00	7.2E+00	7.5E+00	7.5E+00
Polychlorinated biphenyls	0.51	5.1E+01	1.5E-01	1.5E-01	1.8E-01	1.1E-01	1.1E-01
Pyrene	3.14	3.1E+02	1.6E+00	1.6E+00	1.8E+00	1.4E+00	1.3E+00
Toluene	0.05	4.7E+00	2.5E+00	2.4E+00	2.4E+00	2.5E+00	2.4E+00
Total mercury (methyl mercury for air emissions)	1.09	1.1E+02	4.3E-01	4.3E-01	5.0E-01	3.6E-01	3.6E-01
Trichlorobenzenes	0.20	2.0E+01	6.5E-01	6.3E-01	6.4E-01	6.3E-01	6.1E-01
Xylene isomers (total)	0.92	9.2E+01	2.6E+01	2.5E+01	2.5E+01	2.6E+01	2.5E+01

SMU (Insert Value: 1 through 7):	6
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	156
Total dredge volume in cy:	7,309,000
Dredge cut in feet (either average or to max conc):	29
Post-dredge water depth (either average or to max conc.) in feet:	37
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	48,727
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	40%
Specific gravity:	2.6
TOC:	1.9%
In Situ Sediment Density (% solids by weight)	48%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics		
Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	
Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics		
Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		22		1		1		1	
Benzene	0.04	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Benzo[a]pyrene	1.16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chlorobenzene	0.13	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	0.23	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Ethylbenzene	0.57	0.006	0.006	0.001	0.001	0.001	0.001	0.000	0.000
Fluorene	1.13	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Hexachlorobenzenes	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	2.81	0.012	0.012	0.008	0.008	0.008	0.008	0.002	0.002
Phenanthrene	5.03	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Phenol	0.09	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000
Polychlorinated biphenyls	0.51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pyrene	3.14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toluene	0.05	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Total mercury (methyl mercury for air emissions)	1.09	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trichlorobenzenes	0.20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xylene isomers (total)	0.92	0.006	0.006	0.006	0.006	0.006	0.006	0.000	0.000

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7): 7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8") 0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values A
Alternative: Lake-Wide J
Notes: Average concentration in dredge cut

Site Characteristics

Area of dredge site within SMU in acres: 38
Total dredge volume in cy: 2,168,000
Dredge cut in feet (either average or to max conc): 35.4
Post-dredge water depth (either average or to max conc.) in feet: 33

Dredging Characteristics

Dredge type: Hydraulic
Dredge size (inch): 14
Production rate in cy/hr: 150
Resuspension rate (%): 1%
Dredging duration in hours: 14,453

Diameter in feet around dredge head to evaluate water quality (1): 100

Sediment Physical Characteristics

Percent fines: 49%
Specific gravity: 2.34
TOC: 1.7%
In Situ Sediment Density (% solids by weight) 43%
DOC (mg/L) 6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr) 191,029 Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing 80.0
% volatilized after 40 days of curing 100.0
Area of Mixing Pad (acres) 1
Area of Mixing Pad (m2) 4,047

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres) 442 Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2) 1,788,711

Avg Sed Specific gravity 2.5

Point of Dredging Impacts - Hydraulic Cutterhead or Clamshell Dredge

Analyte	Sediment concentration of dredged material in mg/kg	Partitioning Coefficients: Koc (mL/g)*	Partitioning Coefficients: Kd (mL/g)	Average Total Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Total Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU	Average Dissolved Water Quality Constituent Concentration in ug/L: Around Dredge (1)	Average Dissolved Water Quality Constituent Concentration in ug/L: Over Dredging Area in SMU
Total suspended solids (mg/L)				8	1		
Benzene	0.39	100		3.3E-03	2.3E-04	3.3E-03	2.3E-04
Benzo[a]pyrene	1.58	1,096,478		1.3E-02	9.2E-04	1.3E-02	9.2E-04
Chlorobenzene	3.79	500		3.2E-02	2.2E-03	3.2E-02	2.2E-03
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	2,399		1.3E-01	9.1E-03	1.3E-01	9.1E-03
Ethylbenzene	0.78	588		6.6E-03	4.5E-04	6.6E-03	4.5E-04
Fluorene	5.77	15,136		4.9E-02	3.4E-03	4.9E-02	3.4E-03
Hexachlorobenzenes	0.25	1,513,561		2.1E-03	1.5E-04	2.1E-03	1.5E-04
Naphthalene	22.84	2,344		1.9E-01	1.3E-02	1.9E-01	1.3E-02
Phenanthrene	13.65	342,748		1.2E-01	8.0E-03	1.1E-01	8.0E-03
Phenol	0.08	100		6.5E-04	4.5E-05	6.5E-04	4.5E-05
Polychlorinated biphenyls	0.98	1,380,384		8.3E-03	5.7E-04	8.1E-03	5.7E-04
Pyrene	5.80	208,930		4.9E-02	3.4E-03	4.8E-02	3.4E-03
Toluene	0.87	490		7.4E-03	5.1E-04	7.4E-03	5.1E-04
Total mercury (methyl mercury for air emissions)	7.93	409,471	6,961	6.7E-02	4.6E-03	6.6E-02	4.6E-03
Trichlorobenzenes	2.44	18,197		2.1E-02	1.4E-03	2.1E-02	1.4E-03
Xylene isomers (total)	4.22	1,413		3.6E-02	2.5E-03	3.6E-02	2.5E-03

* An equivalent Koc was computed for metal constituents using the relationship (Koc)equivalent = Kd/foc

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	2,168,000
Dredge cut in feet (either average or to max conc):	35.4
Post-dredge water depth (either average or to max conc.) in feet:	33
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,453
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Mechanical Dredging Sediment Handling and Disposal

Analyte	Average concentration of dredged material in mg/kg	Average Sediment Concentration of Stockpile in mg/kg
Benzene	3.9E-01	3.9E-01
Benzo[a]pyrene	1.6E+00	1.6E+00
Chlorobenzene	3.8E+00	3.8E+00
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	1.6E+01	1.6E+01
Ethylbenzene	7.8E-01	7.8E-01
Fluorene	5.8E+00	5.8E+00
Hexachlorobenzenes	2.5E-01	2.5E-01
Naphthalene	2.3E+01	2.3E+01
Phenanthrene	1.4E+01	1.4E+01
Phenol	7.7E-02	7.7E-02
Polychlorinated biphenyls	9.8E-01	9.8E-01
Pyrene	5.8E+00	5.8E+00
Toluene	8.7E-01	8.7E-01
Total mercury (methyl mercury for air emissions)	7.9E+00	7.9E+00
Trichlorobenzenes	2.4E+00	2.4E+00
Xylene isomers (total)	4.2E+00	4.2E+00

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	2,168,000
Dredge cut in feet (either average or to max conc):	35.4
Post-dredge water depth (either average or to max conc.) in feet:	33
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,453
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Hydraulic Dredging Sediment Handling and SCA

Analyte	Average concentration of dredged material in mg/kg	Average Total Water Quality Constituent Concentration in ug/L			Average Dissolved Water Quality Constituent Concentration in ug/L		
		Influent	Supernatant	Supernatant after Volatilization	Influent	Supernatant	Supernatant after Volatilization
Total suspended solids		100,000	100	100			
Benzene	0.39	3.9E+01	3.5E+01	3.4E+01	3.3E+01	3.5E+01	3.4E+01
Benzo[a]pyrene	1.58	1.6E+02	4.1E-01	4.1E-01	6.4E-01	3.3E-01	3.3E-01
Chlorobenzene	3.79	3.8E+02	2.1E+02	2.1E+02	2.1E+02	2.1E+02	2.1E+02
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	1.6E+03	3.2E+02	3.2E+02	3.1E+02	3.2E+02	3.2E+02
Ethylbenzene	0.78	7.8E+01	4.1E+01	4.0E+01	3.9E+01	4.1E+01	4.0E+01
Fluorene	5.77	5.8E+02	2.4E+01	2.3E+01	2.3E+01	2.3E+01	2.3E+01
Hexachlorobenzenes	0.25	2.5E+01	6.2E-02	6.1E-02	9.9E-02	4.9E-02	4.8E-02
Naphthalene	22.84	2.3E+03	4.8E+02	4.7E+02	4.6E+02	4.8E+02	4.7E+02
Phenanthrene	13.65	1.4E+03	5.2E+00	5.1E+00	7.1E+00	4.4E+00	4.3E+00
Phenol	0.08	7.7E+00	6.9E+00	6.9E+00	6.6E+00	6.9E+00	6.9E+00
Polychlorinated biphenyls	0.98	9.8E+01	2.4E-01	2.4E-01	3.9E-01	1.9E-01	1.9E-01
Pyrene	5.80	5.8E+02	2.9E+00	2.9E+00	3.7E+00	2.5E+00	2.5E+00
Toluene	0.87	8.7E+01	5.0E+01	4.9E+01	4.8E+01	5.0E+01	4.9E+01
Total mercury (methyl mercury for air emissions)	7.93	7.9E+02	2.8E+00	2.8E+00	3.9E+00	2.3E+00	2.3E+00
Trichlorobenzenes	2.44	2.4E+02	8.4E+00	8.3E+00	8.4E+00	8.2E+00	8.1E+00
Xylene isomers (total)	4.22	4.2E+02	1.3E+02	1.3E+02	1.2E+02	1.3E+02	1.3E+02

Attachment D - Predicted Water Quality Impacts Associated with Dredging

Alternative J, SMU 7

Onondaga Lake Feasibility Study

SMU (Insert Value: 1 through 7):	7
Selected Dredge Cut (Insert Value e.g. "0-1", "0-2", "0-3"…"0-8")	0-8
Select Maximum ("M") or Average ("A") Sediment Conc. Values	A
Alternative:	Lake-Wide J
Notes:	Average concentration in dredge cut
Site Characteristics	
Area of dredge site within SMU in acres:	38
Total dredge volume in cy:	2,168,000
Dredge cut in feet (either average or to max conc):	35.4
Post-dredge water depth (either average or to max conc.) in feet:	33
Dredging Characteristics	
Dredge type:	Hydraulic
Dredge size (inch):	14
Production rate in cy/hr:	150
Resuspension rate (%):	1%
Dredging duration in hours:	14,453
Diameter in feet around dredge head to evaluate water quality (1):	100
Sediment Physical Characteristics	
Percent fines:	49%
Specific gravity:	2.34
TOC:	1.7%
In Situ Sediment Density (% solids by weight)	43%
DOC (mg/L)	6.0

Mechanical Dredging Sediment Handling and Disposal Characteristics

Feedrate (kg/hr)	191,029	Based on dredging production rate and an avg specific gravity for all SMU sediments
% volatilized during mixing	80.0	
% volatilized after 40 days of curing	100.0	
Area of Mixing Pad (acres)	1	
Area of Mixing Pad (m2)	4,047	

Hydraulic Dredging Sediment Handling and SCA (Lagoon) Characteristics

Area of Lagoon (acres)	442	Insert acreage associated with Lakewide Alternative
Area of Lagoon (m2)	1,788,711	
Avg Sed Specific gravity	2.5	

Dredging-Area as a CSTR with Dredging and Effluent Discharge

Analyte	Average concentration of dredged material in mg/kg	Avg. SMU Water Column Concentration with 1 Dredge & Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Enhanced Primary SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & EP + MMF SCA Effluent (ug/L)		Avg. SMU Water Column Concentration with 1 Dredge & Advanced SCA Effluent (ug/L)	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total suspended solids		50		2		1		1	
Benzene	0.39	0.017	0.017	0.013	0.013	0.013	0.013	0.000	0.000
Benzo[a]pyrene	1.58	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
Chlorobenzene	3.79	0.107	0.107	0.107	0.107	0.107	0.107	0.002	0.002
Dichlorobenzenes (sum) (1,4 Dichlorobenzene for air calculations)	15.67	0.168	0.168	0.102	0.102	0.097	0.097	0.010	0.010
Ethylbenzene	0.78	0.020	0.020	0.004	0.004	0.003	0.003	0.001	0.001
Fluorene	5.77	0.015	0.015	0.003	0.003	0.003	0.003	0.003	0.003
Hexachlorobenzenes	0.25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Naphthalene	22.84	0.248	0.248	0.159	0.159	0.159	0.159	0.030	0.030
Phenanthrene	13.65	0.010	0.010	0.010	0.010	0.008	0.008	0.008	0.008
Phenol	0.08	0.003	0.003	0.002	0.002	0.002	0.002	0.000	0.000
Polychlorinated biphenyls	0.98	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Pyrene	5.80	0.005	0.004	0.005	0.005	0.003	0.003	0.003	0.003
Toluene	0.87	0.025	0.025	0.018	0.018	0.017	0.017	0.001	0.001
Total mercury (methyl mercury for air emissions)	7.93	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Trichlorobenzenes	2.44	0.006	0.005	0.005	0.005	0.004	0.004	0.002	0.002
Xylene isomers (total)	4.22	0.066	0.066	0.065	0.065	0.065	0.065	0.003	0.003

SUMMARY of CUMULATIVE LONG-TERM AIR RISK for EACH LAKEWIDE ALTERNATIVE

Alternative	**Non-Cancer Risk**																	
	Annual HQ Maximum Cumulative HQ over all chemicals									**Odor Risk** Maximum Cumulative Cancer Risk over all chemicals								
	SMU-1	SMU-2	SMU-3	SMU-4	SMU-5	SMU-6	SMU-7	SCA	Mixing	SMU-1	SMU-2	SMU-3	SMU-4	SMU-5	SMU-6	SMU-7	SCA	Mixing
B	not incl	not incl		not incl	not incl		not incl	0.01	0.7	not incl	not incl		not incl	not incl		not incl	9.0E-06	8.5E-04
C				not incl	not incl		not incl	0.49	**14**				not incl	not incl		not incl	7.4E-04	1.9E-02
D1					not incl		not incl	0.82	**17**					not incl		not incl	1.6E-03	3.2E-02
D2								0.58	**9**								1.8E-03	2.9E-02
E					not incl			**1.25**	**13**					not incl			2.0E-03	1.3E-02
F1								0.89	**13**								2.0E-03	3.0E-02
F2								**2.64**	**28**								4.3E-03	3.0E-02
F3								**3.88**	**32**								6.3E-03	3.4E-02
F4								**4.12**	**30**								6.9E-03	3.1E-02
G								**5.39**	**27**								8.9E-03	2.4E-02
H								**5.30**	**25**								8.6E-03	2.3E-02
I								**1.51**	**12**								2.4E-03	1.2E-02
J	3.5E-03	1.3E-03	1.1E-04	1.7E-04	9.3E-05	3.6E-03	1.5E-03	**1.43**	**8**	2.7E-06	1.6E-06	7.8E-09	9.9E-10	4.9E-09	1.7E-07	2.0E-07	2.2E-03	8.2E-03
							0.01											

Height of SCA	Acreage of SCA
14	28
14	54
14	84
14	112
50	262
14	112
14	172
14	215
14	257
14	308
14	325
50	282
50	442

Not quantitatively evaluated.

Alternative	**Cancer Risk**																	
	Cancer Risk (unscaled, assuming 70 yrs exposure) Maximum Cumulative Cancer Risk over all chemicals									**Cancer Risk (scaled)** Maximum Cumulative Cancer Risk over all chemicals								
	SMU-1	SMU-2	SMU-3	SMU-4	SMU-5	SMU-6	SMU-7	SCA	Mixing	SMU-1	SMU-2	SMU-3	SMU-4	SMU-5	SMU-6	SMU-7	SCA	Mixing
B	not incl	not incl		not incl	not incl		not incl	5.8E-07	1.4E-03	not incl	not incl		not incl	not incl		not incl	5.9E-10	1.6E-08
C				not incl	not incl		not incl	3.3E-06	1.4E-03				not incl	not incl		not incl	5.7E-10	2.2E-08
D1					not incl		not incl	7.5E-06	1.6E-03					not incl		not incl	3.5E-08	8.7E-07
D2								9.0E-06	1.3E-03								5.7E-08	**1.2E-06**
E					not incl			8.8E-06	1.5E-03					not incl			2.4E-07	**2.8E-06**
F1								9.2E-06	1.6E-03								5.8E-08	**1.2E-06**
F2								1.8E-05	1.7E-03								1.8E-07	**2.0E-06**
F3								2.7E-05	1.8E-03								1.7E-07	**1.4E-06**
F4								2.9E-05	1.7E-03								2.3E-07	**1.6E-06**
G								3.6E-05	1.6E-03								3.3E-07	**1.5E-06**
H								3.5E-05	1.5E-03								3.4E-07	**1.5E-06**
I								1.1E-05	1.6E-03								3.2E-07	**2.9E-06**
J	7.8E-10	3.2E-10	1.0E-10	1.0E-11	4.1E-11	7.8E-10	2.4E-10	1.0E-05	1.3E-03	7.8E-10	1.7E-11	5.5E-12	5.5E-13	2.2E-12	4.2E-11	1.3E-11	5.0E-07	**3.4E-06**

Height of SCA	Acreage of SCA
14	28
14	54
14	84
14	112
50	262
14	112
14	172
14	215
14	257
14	308
14	325
50	282
50	442

Alternative	hours/shift; 2 shifts/day; 20 days/month; 7 mos/yr		
	Number of Crews	Number of Cumulative Dredge Hours (hours)	Sediment Handling Duration (Dredge Hours + 40 days) (hours)
B	2	743	1,703
C	2	113	1,073
D1	2	2,937	3,897
D2	2	3,987	4,947
E	4	18,548	19,508
F1	2	4,023	4,983
F2	2	6,227	7,187
F3	4	4,032	4,992
F4	4	4,912	5,872
G	4	5,817	6,777
H	4	6,207	7,167
I	4	20,307	21,267
J	4	33,233	34,193

Alternative	**Area (Acres)**								
	SMU1	SMU2	SMU3	SMU4	SMU5	SMU6	SMU7	SCA	SCA Height
B	not incl	not incl	11	not incl	not incl	11	not incl	28	14
C	36	10	11	not incl	not incl	11	not incl	54	50
D1	45	10	11	22	not incl	11	not incl	84	14
D2	45	10	11	22	20	28	13	112	14
E	84	16	29	75	not incl	94	38	262	50
F1	45	10	11	22	14	33	13	112	14
F2	63	10	11	22	24	33	13	172	14
F3	84	10	11	22	24	33	13	215	14
F4	84	10	11	22	24	33	13	257	14
G	84	10	11	22	24	33	13	308	14
H	84	10	11	22	24	33	13	325	14
I	84	16	29	75	24	123	38	282	50
J	84	34	113	75	108	156	38	442	50

Selected Old Alternative Results are in "hidden rows"

Because the long term worst case Pt. Of Dredge risks (Alt J) were so low, I did not calculate interpolated values for the other Lakewide Alternatives. I did however calculate interpolated values for the SCA as the long term risks were much higher.

SUMMARY of CUMULATIVE LONG-TERM AIR RISK for EACH LAKEWIDE ALTERNATIVE

Alternative	Non-Cancer Risk																	
	1-Hr HQ Maximum Cumulative Odor Risk over all chemicals									**Odor Risk (Residential)** Maximum Cumulative Odor Risk over all chemicals								
	SMU-1	SMU-2	SMU-3	SMU-4	SMU-5	SMU-6	SMU-7	SCA	MIXING**	SMU-1	SMU-2	SMU-3	SMU-4	SMU-5	SMU-6	SMU-7	SCA	MIXING**
B	not incl	not incl		not incl	not incl		not incl	7.6E-03	0.4	not incl	not incl		not incl	not incl		not incl	0.01	**3**
C				not incl	not incl		not incl	1.9E-02	**2.7**				not incl	not incl		not incl	0.75	**106**
D1					not incl		not incl	3.0E-02	**3.6**					not incl		not incl	**0.99**	**93**
D2								3.5E-02	**3.6**								**1.16**	**93**
E					not incl			4.2E-02	**2.6**					not incl			**0.91**	**104**
F1								3.5E-02	**3.6**								**1.16**	**106**
F2								7.9E-02	**4.1**								**1.90**	**164**
F3								9.3E-02	**4.1**								**2.24**	**164**
F4								9.8E-02	**3.6**								**2.17**	**141**
G								8.9E-02	**3.3**								**2.15**	**118**
H								9.2E-02	**3.3**								**1.98**	**118**
I								4.4E-02	**2.6**								**0.96**	**104**
J	7.8E-06	1.7E-06	4.6E-07	1.3E-08	8.0E-09	3.7E-07	3.2E-07	5.4E-02	**2.6**	1.3E-04	4.7E-05	4.1E-07	5.5E-08	2.0E-07	7.9E-06	8.0E-06	**1.16**	**104**

Height of SCA	Acreage of SCA
14	28
14	54
14	84
14	112
50	262
14	112
14	172
14	215
14	257
14	308
14	325
50	282
50	442

Alternative	Non-Cancer Risk																	
	Worker Risk Maximum Cumulative HQ over all chemicals									**Worker Odor Risk** Maximum Cumulative Odor Risk over all chemicals								
	SMU-1	SMU-2	SMU-3	SMU-4	SMU-5	SMU-6	SMU-7	SCA	MIXING**	SMU-1	SMU-2	SMU-3	SMU-4	SMU-5	SMU-6	SMU-7	[redacted]	[redacted]
B	not incl	not incl		not incl	not incl		not incl	3.1E-03	1.3E-01	not incl	not incl		not incl	not incl		not incl		
C				not incl	not incl		not incl	5.2E-03	4.0E-01				not incl	not incl		not incl		
D1					not incl		not incl	1.2E-02	4.0E-01					not incl		not incl		
D2								1.4E-02	4.0E-01									
E					not incl			1.2E-02	2.3E-01					not incl				
F1								1.4E-02	4.0E-01									
F2								2.4E-02	6.2E-01									
F3								2.8E-02	6.2E-01									
F4								2.9E-02	5.4E-01									
G								2.4E-02	4.5E-01									
H								2.5E-02	4.5E-01									
I								1.2E-02	4.0E-01									
J	4.8E-07	2.9E-07	2.2E-07	7.1E-10	3.0E-09	1.5E-08	1.2E-07	1.5E-02	4.0E-01	7.5E-05	5.4E-05	5.2E-07	7.8E-08	5.2E-07	3.1E-06	2.6E-05		

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14	28
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Not quantitatively evaluated.

Notes:
*** Summary short term mixing pad results are based on the SMU sediments that produced the highest short term risk.