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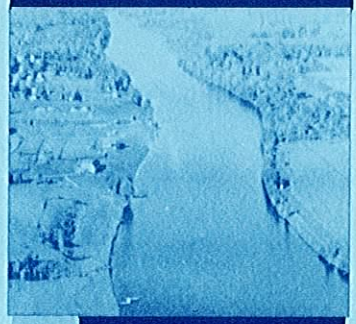

Grasse River Update

SUPERFUND PROGRAM

ALCOA

The Grasse River Update is produced periodically by Alcoa to provide an overview of activities associated with the Grasse River Study Area, including key elements and next steps in the PCB cleanup process. The information in this Update was prepared by Alcoa and provided during a November 2001 public availability session held at the St. Lawrence Mall. Your comments are welcome.

A Brief History of the River Area

The first permanent settlers in the area surrounding the lower Grasse River were the Mohawk people. They established communities in close proximity to the three tributaries of the St. Lawrence River (Grasse, Raquette and Salmon Rivers) around 1754. River access made travel easy and provided an abundant supply of fish.

Mohawk People named the Grasse River Ni-ken-tsia-ke (place where the fishes live). They also referred to the lower portions of the river as Tsi-we-ne-ke-ras (smell of hay), a term from which the English name, Grasse River, was derived.

In 1792, Amable Faucher introduced industry to the area when he erected a dam and saw mill on the banks of the Grasse River. Further development and more permanent settlements were established as a result. The Mohawk People continued to hunt, fish, and harvest hay, sweet grass and an array of medicinal plants from the meadows along the river during this period.

The population along the Grasse grew in the early 1800s with an influx of settlers from Vermont and Massachusetts and the Town of Massena was incorporated in 1802. In the early to mid-1800s, the area became a popular vacation spot due to its many mineral spring spas, rivers and natural beauty.

Development increased in 1897 when work was initiated to build a power canal 300 feet wide, 25 feet deep and over 3 miles long between the St. Lawrence River and the Grasse River. To capture the power generated by a 47 foot elevation drop between the two rivers, a Powerhouse was constructed where the canal met the Grasse River.

Initially producing 200,000 horsepower, the Powerhouse was expanded in 1903 and lower portions of the Grasse River were excavated to deepen and widen the channel to support the increased flows from the Powerhouse.

The Pittsburgh Reduction Company (now Alcoa) purchased the Powerhouse in 1899 and began construction of an aluminum plant in 1902 to take advantage of this new source of hydroelectric power. Several plant expansions were completed as demand for aluminum increased through the war years.

Construction of the Eisenhower Locks System and the Moses-Saunders Power

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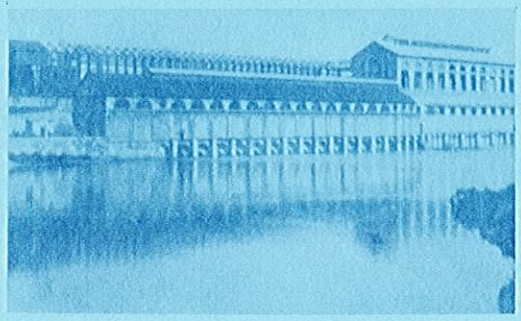

A Powerhouse on the Grasse River provided hydro-electric power to Alcoa from 1902 through 1958.

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River History

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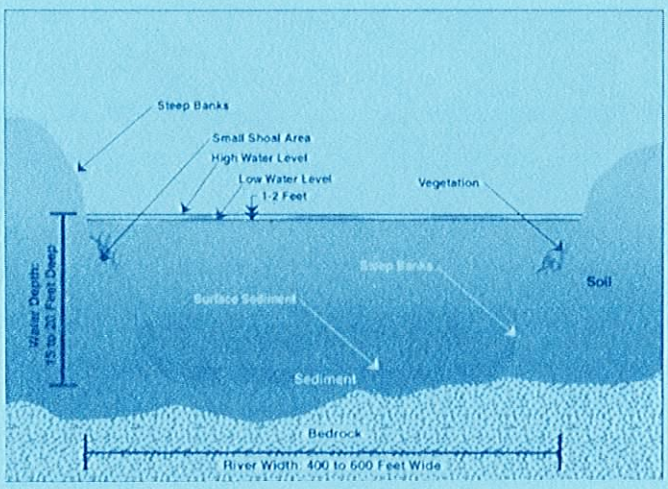
Dam (FDR Project), a joint US and Canadian development project on the St. Lawrence River, began in 1954. This initiative stimulated further industrialization in the Massena area, along the Grasse and St. Lawrence Rivers. Reynolds Metals Company obtained a contract for power from the new project and broke ground for their St. Lawrence Reduction Plant (now Alcoa's East Plant) in 1957. General Motors also announced plans to build a new facility in Massena. Construction began for the local Chevrolet fabricating plant in 1957. Powered by energy from the FDR Project, the plant opened in 1959.

The Powerhouse that supplied hydro-electric power to Alcoa in Massena ceased operation in 1958 when the FDR Project became the power provider. The New York Power Authority purchased the Powerhouse and Canal that same year.

River Characteristics



Typical Grasse River Cross Section

Head waters of the Grasse River gather in the Adirondacks and travel 112 miles through mountainous terrain, wetlands and populated areas before discharging into the St. Lawrence River.

The Grasse River flows at an average rate of 730 million gallons per day. Most areas of the lower Grasse River have normal flow rates of 0.17 feet per second.

Typical vegetation found in the Grasse River includes ***Wild Celery, Pondweed, Elodia and Piceralweed***. River sampling found 17 species of fish inhabit the Grasse River. Some of the most commonly found fish (***Brown Bullhead, Smallmouth Bass and Spottail Shinner***) were incorporated into studies of the river to determine the impact of pollution on representative fish species.

Studying the River

Alcoa has been working with the U.S. Environmental Protection Agency (EPA) and other stakeholder groups for over a decade to understand the nature and extent of impacts from historic discharges into the Grasse River and to find the best solution for PCB cleanup in the lower Grasse River.

Studies have been conducted to determine the extent of contamination on:

- ⇒ **Discharges into the River**
- ⇒ **Biota (fish)**
- ⇒ **River bottom sediments**
- ⇒ **Water Column**
- ⇒ **Flows (upstream and down)**
- ⇒ **Groundwater**
- ⇒ **Power Canal**

Laboratory tests on samples from a wide range of environmental media found polychlorinated biphenyls (PCBs) and other contaminants.

PCBs were found to be the major concern, and surface sediments containing PCBs were found to be the principal source of contamination in water and fish.

As a result of these studies the 7 mile stretch of the Grasse River from the Power Canal to the St. Lawrence was identified to be the area for remedial focus. This section of the Grasse River, often referred to as the Lower Grasse River, is the portion deepened and widened to accommodate increased flow from the Power Canal.

Polychlorinated biphenyls (PCBs) are a group of more than 200 man-made chemical compounds. Because of their remarkable insulating and flame retardant properties, PCB's were widely used in industry until the mid-1970's. These chemicals were primarily used in hydraulic systems and transformers at Alcoa's Massena Operations.

Finding A Solution

Alcoa is working with the US Environmental Protection Agency, the New York State Department of Environmental Conservation, the St. Regis Mohawk Tribe, the community, and other agencies to find the best solution for PCB cleanup in the Grasse River. Different methods, materials and technologies are being evaluated. Based on studies conducted to date, three primary remedial alternatives exist for managing contaminated sediments.

Natural Recovery

Natural processes, such as burial by clean sediments, isolate contaminants from fish and other animals. Routine monitoring is established to measure changes to environmental media (water, fish, plant life, etc.).

Potential Benefits

⇒ Uses natural ecological environmental processes
⇒ Least disruptive to the existing ecosystem
⇒ No interruption of river use due to construction
⇒ No construction traffic concerns
⇒ Generally, lowest cost

Potential Concerns

⇒ May take a long time to reduce contaminant levels in biota
⇒ Contaminants isolated, but remain in the environment
⇒ Animals in the food chain and people who ignore fishing advisory will continue to be exposed until natural recovery is effective

Fishing from the banks of the Grasse River

Each potential remedial alternative has benefits and disadvantages. A single perfect remedy does not exist and a combination of alternatives

Containment In-Place (Capping)

2001 capping study in lower Grasse River

Clean material such as soil or sand is placed over sediments as a cap. Designed to withstand variations in flow conditions, the cap isolates contaminants from the water, fish and other biota to speed ecosystem recovery. Long-term monitoring and inspection ensures the integrity and effectiveness of the cap.

Alcoa conducted a capping study on a section of the Grasse River during this construction season to test the effectiveness of materials and placement techniques.

Potential Benefits

⇒ Can be constructed relatively quickly
⇒ Minimal release of contaminants to the environment
⇒ Expected to reduce fish contamination levels and use restrictions may be removed or relaxed in a reasonable time frame
⇒ Conventional equipment used
⇒ Generally, mid-level cost

Potential Concerns

⇒ Contaminants remain in the environment, although isolated
⇒ Capping may require maintenance
⇒ Existing ecosystem will be disrupted
⇒ Disruption of river use in construction area and increased local construction traffic to transport capping material.

Removal

Inside a containment system, dredging equipment is used to remove sediments. Residual water is extracted and treated. Sediments are solidified before landfilling in a permitted facility. Alcoa conducted a pilot dredging project in 1995 to study the effectiveness of this technique in the Grasse River.

Potential Benefits

⇒ Removes contaminants from the environment
⇒ Can potentially reduce PCB levels in fish over longer term
⇒ Conventional equipment can be used

Potential Concerns:

⇒ May not be possible to remove all targeted sediments and residual contamination may remain
⇒ Contaminant releases to water and fish may occur during and immediately following dredging
⇒ Could take several years
⇒ Disruption of existing ecosystem

1995 dredging study at Alcoa outfall

⇒ Disruption of River use in construction areas
⇒ Increase local construction traffic to remove dredged material
⇒ Generally, highest cost

The Facts

- Historically, water discharged from Alcoa's Massena Operations from three outfalls contained some oils and PCBs.
- Use of PCB containing materials was terminated in the mid-1970s.
- PCBs have been found in the sediment and surface water of the river from the power canal to the mouth.
- A Fishing Advisory was issued by the New York State Department of Health for the Grasse River in 1990 from the Power Canal to where the Grasse River meets the St. Lawrence River.
- Studies conducted to understand how PCBs migrate from the sediment into the water and then into fish and other biota have shown that surface sediments containing PCBs pose the risk.
- Remediation of the Massena Operations land based waste disposal areas was completed between 1991 and 2001. Release of PCBs into the Grasse River have been reduced to near zero as a result.
- Studies indicate that PCB levels in fish have been declining since 1995 due to source elimination and clean-up activities.
- Three primary alternatives exist for managing contaminated sediments – Natural Recovery, Containment In-Place (Capping), or Removal (Dredging). These alternatives can be used alone or in combination.
- The effectiveness of each alternative depends on the dynamics of the river and its ecosystem.
- Clean sediments from up stream continue to settle out and bury contaminated sediments but the rate is slow.
- Alcoa is working with the US Environmental Protection Agency (EPA), the New York State Department of Environmental Conservation (DEC) and the St. Regis Mohawk Tribe to address environmental issues in the Grasse River.

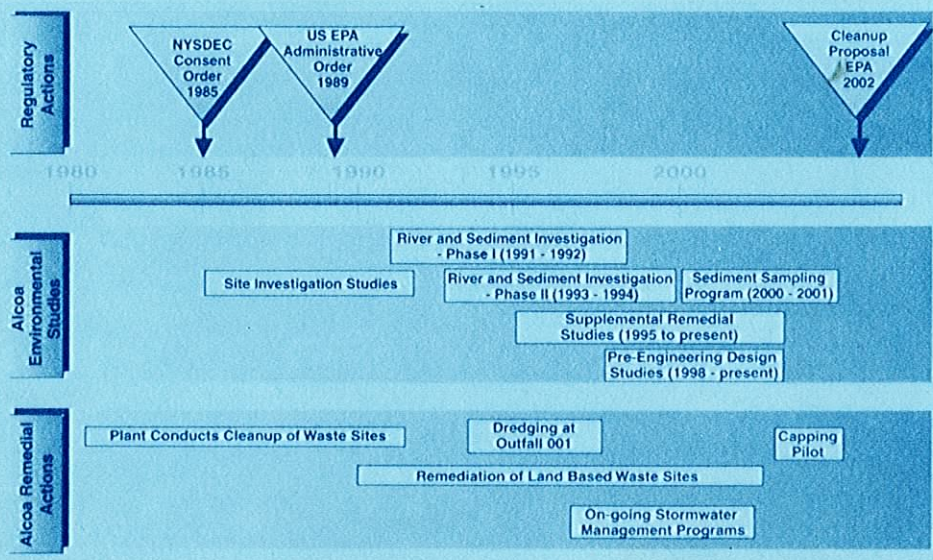
Selecting a Remedial Alternative

EPA issued a Superfund order to Alcoa in 1989 for the investigation of contamination in the Lower Grasse River, evaluation of cleanup alternatives and ultimate remediation. Most sites identified for cleanup were contaminated as a result of historical disposal practices.

In 2002, Alcoa will submit the Analysis of Alternatives Report comparing the benefits and disadvantages for the remedial methods available for the Grasse River. The EPA will evaluate all data and consider public comment before rendering a decision on how Alcoa will clean the River.

Where Do We Go From Here?

Data from the pilot study has been evaluated and Alcoa will submit a revised alternatives analysis to the EPA this month. From there, the EPA will select the appropriate remedy for the Grasse River. Before a final decision is made, the opportunity for public comment will be provided. Ultimately, the chosen remedy will be planned and implemented and long-term monitoring will be conducted to ensure the effectiveness of remediation.



Potential Human Health Effects of PCBs

Studies of the effects of PCBs , particularly on laboratory animals, suggests that exposures to elevated levels of these compounds may cause chronic health effects such as cancer, immunological impairment, reproductive problems and developmental issues. The EPA has classified PCBs as a probable human carcinogen (cancer causing agent).

A recent evaluation of the potential health concerns associated with PCBs in the Grasse River, currently under review by the EPA, indicates that eating fish from the lower Grasse River is the primary exposure route of concern. Other exposure routes, such as swimming and wading, were not found to be associated with elevated risk of health effects in this evaluation.

The New York State Department of Health has issued a fishing advisory, recommending NO consumption of fish from the affected part of the River. Ongoing activities in the Grasse River are intended to reduce the level of PCBs in resident fish populations. Until the cleanup is complete and the New York State Department of Health modifies the fishing advisory currently in effect, it is important that people do not eat fish from the lower Grasse River.