

Fighting the Big Sewage Machine

Salmon were George Allen's passion. He spent his professional life seeking to combine salmon restoration with sewage recycling, a mission as daunting as the upstream struggle of a weary chinook blocked by a dam.

Salmon begin their lives as eggs buried in a gravel nest on a stream bottom, from which tiny fish emerge, swim to the surface, and start to feed. The young grow, lose their infant stripes, and swim to sea, steered by instinct and a physical drive to reach salt water. They range through the ocean for two years or more, growing into magnificent creatures. When the time is right, they return to their home streams to spawn. Crowds of wild, abundant salmon once fought their way up the rivers of the Pacific coast from central California to Alaska.

The cycle was eternal, with no distinct beginning or end, until white civilization blocked the rivers with dams and smothered the spawning grounds in silt. By the time Allen came to teach fisheries at Humboldt State, in 1957, salmon runs all along the west coast were depleted. Most of the ancient stocks that had once populated the streams feeding Humboldt Bay were extinct.

In an obscure corner of Arcata's treatment plant, Allen and his students raised young coho and chinook in treated sewage flowing out of the city's oxidation ponds. Soon after he arrived in Humboldt, Allen had begun planning to resurrect the bay's lost salmon stocks, and Arcata's sewage oxidation ponds proved the only likely spot to launch his quest (Fig. 6.1). The oxidation ponds were a constant source of fresh water, with access to a stream, Jolly Giant Creek, which formed a small estuary where he could release fish to the bay. He took fingerlings from any hatchery that had extras and raised them to the moment of smoltification, when they lost their baby stripes, turned shiny silver, and transformed from freshwater to saltwater creatures. His intense hope was that they'd go to sea and return as adults, making the city's wastewater plant the center of a salmon revival in Humboldt Bay.

Getting his aquaculture facility built took years—it was first approved in 1963 but, for lack of funding, was not constructed until 1971. Allen persisted. From beneath his bushy eyebrows, he gazed at the world with a singular focus on his fish, often forgetting human details. Three years after one potential grad student wrote to ask if he could study with Allen, he received a reply.

“It was classic George,” remembers David Hull, who would go on to become the first manager of Arcata’s treatment wetlands. “He wrote, ‘Hey, I was cleaning out my office and I found your letter between the wall and my desk. If you’re still interested, come on down.’”

Another grad student showed up for an interview and found Allen, having forgotten the appointment, sloshing into his lab coated with muck. He’d been crawling through culverts on Jolly Giant Creek to make sure there were no barriers to any salmon that might return and push upstream to spawn.

Working at the oxidation ponds caused Allen to sprout a second obsession: recycling the nutrients in sewage to grow fish. In the 1960s he spent a sabbatical year in Europe studying wastewater aquaculture projects in Switzerland and Germany. Munich had a system that raised carp and tench in treated sewage. The fish grew fast, feeding on plankton that thrived in the nutrient-rich water, and were sold at a profit.¹ The use of human waste to fertilize fish ponds was, and is, common in Asia. The process works well with carp and tilapia, which feed on detritus and are adapted to murky waters. Salmon need clear, cold water, and Allen was the only fisheries scientist in the US, and likely in the world, trying to raise them in treated sewage.

The process was frustrating. Oxidation pond water carries high levels of ammonia nitrogen. In alkaline conditions, ammonia becomes intensely toxic to fish; in the early years, many thousands of fingerling salmon died of ammonia poisoning. Later, when Allen worked out the quirks and succeeded in raising fish to the smolt stage, he released them near the mouth of Jolly Giant Creek. Herons and egrets lined up on the banks like guests at a buffet, devouring many of the smolts before they could reach the bay.

Conventional salmon hatcheries had the funding and equipment to control water quality and to fence out predators, but Allen had to scrape by on a shoestring budget. “We do things El Cheapo around here,” he said. To form substrate that could support the invertebrate creatures he hoped would flourish and feed his salmon, he scrounged broken concrete blocks and bundles of brush cut by the city landscaping crew, which were then submerged in the fish ponds. No difficulty fazed him. Well before the days of the Clean Water Act and the nationwide push for improved sewage treatment, Allen had impressed Arcata’s city government with the idea that sewage was a resource, not just a problem to be flushed away. So it was natural that when a city staffer went looking for an escape from the state-mandated Humboldt Bay Wastewater Authority (HBWA) project, he turned to Allen.

Frank Klopp, Arcata’s genial, cigar-chomping director of public works, had let the initial controversy over the regional system pass him by. He was not an environmentalist or an activist of any stripe. If state officials said centralized sewage was the way to go, that was okay with him. On an autumn afternoon in 1976, Klopp was reading through an engineering report on Arcata’s sewer system when he noticed a financial projection in the back pages: Once the HBWA project was up and running, Arcata would need to double its sewer rates to pay for the system’s upkeep.

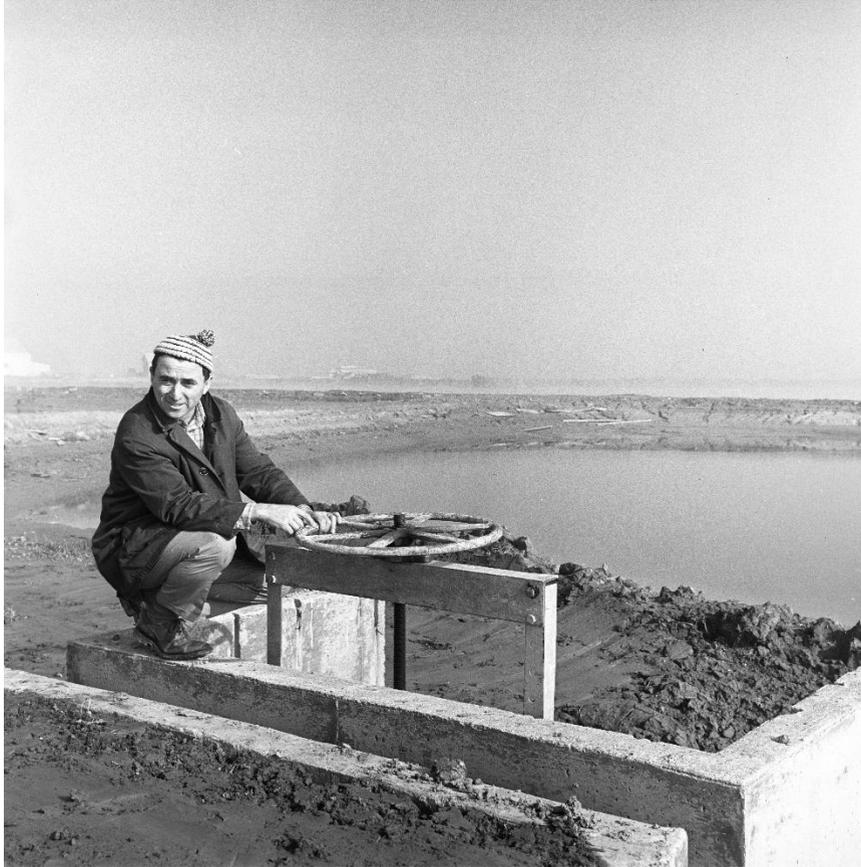


Figure 6.1 George Allen at Arcata's wastewater oxidation ponds on Humboldt Bay, 1971. Photo by Peter Palmquist, courtesy Humboldt Collection, Humboldt State University Library.

"I'd just completed a rate increase for the city, in anticipation of the regional plant being built," Klopp remembers. "The last pages of this study said that in two years we were going to have to double our sewer rates *again*."

He winced at the prospect. "As public works director, when you stand in front of the citizens of Arcata and announce a raise in the sewer rates," he says wryly, "you're not universally applauded."

Klopp got up and walked into the city manager's office. Dan Hauser and another city council member, Sam Pennisi, were there. Klopp explained his new discovery about the cost of the regional system: Arcata's portion of the cost of maintenance and operation had risen to \$475,000 a year, every year, forever.

"Want to try one more time to get out?" he asked.

"Go ahead and try, if you want," replied Hauser.

Klopp wasn't driven by worries over urban sprawl or the risk of pollution if there was a break in the miles of pipeline planned to carry sewage around the bay and under its floor. "The reason I got into it," he says, "was straight economics. The state water quality board came up with what you get a lot of with government, a one size fits all plan. [The Bays and Estuaries policy] was not

taking the world as it is right now and asking how can we protect existing uses and make it better. It was a policy to say, basically, we're going to go for deep water discharges."

To justify Arcata's escape from the HBWA project, Klopp turned to Allen's aquaculture experiment. He proudly called this notion his "brainfart." The state wouldn't allow any sewage effluent to flow to the bay unless it could be proven to enhance the waters. Klopp was an avid fisherman and duck hunter: If using treated sewage to grow salmon and release them to the bay wasn't enhancement, he couldn't imagine what was.

John Hannum, the regional board's engineer, was not impressed. He warned that "Things would go rather hard for Arcata" if it withdrew from HBWA. He dismissed the notion that sewage aquaculture could release the city from the regional system. "Allen managed to get fish to survive in wastewater, but that's not aquaculture," he told a reporter. Hannum knew the aquaculture experiment had suffered episodes of mass ammonia poisoning. Smolts had been released, but at the time of Klopp's brainfart, no adult salmon had yet returned to Arcata. Klopp cheerfully acknowledged that the city was unlikely to ever turn a profit from fish farming. That didn't matter, he said, because "all we're really looking for is an alternative to pumping sewage into the ocean."

Allen had known David Joseph for years and had supported Joseph's fight to stop beach discharge of pulp mill wastes in the 1960s. When they encountered each other again during the long fight for an alternative to the HBWA project, Allen's eccentricities drove Joseph nuts. Between technical arguments, Joseph, a tidy man, would plead with Allen to put on two socks of the same color.

Under Allen's influence, Arcata's crew of sewage activists would eventually come up with a treatment alternative so useful that it has now been imitated around the world. The process took time, however, and it never would have happened if the HBWA project went ahead on schedule. A new pocket of resistance cropped up from an unexpected quarter, led by a soft-spoken peacenik who used the courts to stall the sewage construction juggernaut.

At first, Dan Ihara wanted to make sure that the HBWA project would include his town. He was a member of the Community Services District in Manila, a village of a few hundred people on Humboldt Bay's western shore. Manila had no sewer system, and Ihara figured the community couldn't afford to miss out on the chance for low-cost wastewater treatment being touted by HBWA's engineers.

That changed in September 1976, when he came across some cost projections from a Winzler and Kelly engineer that showed Manila would face much higher sewage costs as part of the regional system than it would in building its own treatment plant. Manila had no official voice on the HBWA board, but it seemed clear the town would be bankrupted by the costs of the regional project if it went ahead.

Ihara, a conscientious objector to the Vietnam War, had spent the early 1970s doing alternative service in San Francisco, scraping by on a stipend of \$50 a month. He and his wife moved north to Humboldt to get away from the big city, and landed in Manila where housing was cheap. By 1976, their daughter was a toddler. Ihara was working at Redwoods United, a community development

agency, where he helped create and run job programs for disabled adults and disadvantaged teens. He was doing good work for low pay—a pattern that would hold throughout his life.

A mutual friend connected Ihara with Jacqueline Kasun, an economics professor at Humboldt State, who was also worried about HBWA. Kasun lived among the pastures south of Arcata and dreaded the development a sewer line would bring to the area. She had previously fought freeway projects proposed for Arcata and Eureka. “I was identified as an environmentalist,” she said. “But I didn’t fight those freeways so much on environmental grounds. I’m an economist, and I don’t like boondoggles.”²

In Kasun’s eyes, the regional sewage project was wildly overdesigned, with a capacity more appropriate to an urban zone than to mostly rural Humboldt County. One extreme example was the plan for the hamlet of Indianola, where Kasun lived. Homes there were scattered and population was low, less than one person to the acre. “The costs of extending sewer lines . . . to such sparsely settled areas are too high to be practical,” she wrote. “This has always been common knowledge, at least until sanitary engineers got into the enormously profitable business of hustling sewer grants.”³ The majority of the HBWA project’s massive cost, she pointed out, was for moving sewage as opposed to treating it.

HBWA was about to issue \$12 million in bonds to finance the local share of costs for the regional sewer system. Ihara and Kasun consulted with a lawyer, who told them that the only way to stop the project was to give local people a chance to vote against it. They could petition for a referendum on the sewer bonds, but time was short: The bonds would be issued in a few days, unless opponents could gather at least three thousand voter signatures before the October 7 deadline.

They called a community meeting at the Presbyterian Church, a rambling clapboard building in Arcata. On the evening of September 31, about thirty people gathered there. “We asked if there was enough interest to do it,” Ihara remembered. “We passed the hat around, and people said, let’s go for it. By the time of that meeting, there were seven days left.” The newborn Committee for a Sewer Referendum managed to gather more than three thousand signatures and rushed them to the county clerk’s office just before the 5 p.m. closing time on the day of the deadline.

The next day, HBWA’s lawyer, John Stokes, announced that the petitions had been delivered to the wrong office. Stokes advised the HBWA board that their secretary was the only person who could legally accept the petitions—and that he could no longer do so, since the October 7 deadline had passed. Dan Hauser spoke up. “The filing was made in good faith by the petitioners,” he said. “I think we have a strong moral obligation to these people, and I move we accept the petition.”⁴ No one on the board would second Hauser’s motion. Still, Hauser’s support marked the beginning of a close alliance between Arcata’s sewage rebels and Committee for a Sewer Referendum.

Ihara filed a lawsuit in a bid to force the agency to accept the petitions. Meanwhile, he didn’t sit and wait for the legal wheels to grind: He wrote a letter to the federal Economic Development Administration, threatening further litigation

if the agency approved a \$5 million grant to HBWA. “We urgently request that EDA not authorize a grant which could be used to avoid resolution of issues of public concern and which would undermine the right to petition and call for a referendum,” Ihara wrote. John Stratford, general manager of HBWA, said he was “appalled” to hear of the letter. He described Ihara as a “saboteur.”⁵

Testimony in court revealed that everyone involved, including HBWA staff, had assumed the county clerk’s office was the right place to submit the petitions. “It was like a scene from Perry Mason,” Ihara recalled. “They had the secretary of HBWA on the stand, and they asked him where he was at 5:00 on October 7. He was in the county clerk’s office, looking out the window for us, wanting to see that we met the deadline. If we had gone to his office at that time, he wouldn’t have been there, because he didn’t know he was the one who was supposed to receive the petitions.”

The judge ruled that Committee for a Sewer Referendum’s petitions should be accepted. HBWA appealed the decision. When that tactic failed, HBWA rejected the petitions on the grounds that some of the signatures were invalid—an alleged percentage of the total that varied as the fight wound through the courts.

Ihara and Kasun managed to get hold of rate projections for individual homes and businesses under the HBWA plan. The startlingly high figures won the Committee influential allies, including Lawrence Lazio, head of the local company Lazio Fisheries and a cousin of former San Francisco mayor Joseph Alioto.⁶ A number of local business people began to oppose the regional system, including Don Quinn, of Eureka’s Coca-Cola bottling plant. “Not only are our sewer rates going to be too high,” he wisecracked, “7-Up’s are too low.”

Chuck Goodwin, chairman of the HBWA board, warned that delay was far too expensive. Inflation on the project was close to \$400,000 a month.

David Joseph and his staff made it clear that Allen’s aquaculture experiment, even in an expanded version, would never fly as an official enhancement to Humboldt Bay. Hannum, the regional board engineer, was dismissive of Allen’s project, viewing it as a preordained failure. “They killed millions of little fish at George’s ponds,” he said later. “The pH of the water would go up, and then ammonia would dissociate, and ammonia is acutely toxic to little fish. The birds would kind of burp, you know. You never found too many corpses with those frog-stabbers up there.”

The inspiration for a marsh came out of long discussions between Allen and Robert Gearheart, an environmental engineering professor who’d come to Humboldt State in 1975. Gearheart had worked with low-tech biological sewage treatment systems in Arkansas, Texas, and Utah. The regional board’s insistence on a centralized plant using activated sludge treatment struck him as seriously misguided. The energy-intensive process relies on wastewater being held in the treatment plant for a number of hours, during which a cultivated broth of aerobic bacteria breaks down pollutants. During Humboldt County’s winter rainstorms, the system would be overwhelmed with a high volume of sewage, resulting in the release of untreated effluent to the Pacific. These practical problems were outweighed in the eyes of the state’s engineers by the fact that activated sludge was

in vogue at the time, as were regional systems that pumped sewage long distances to a centralized treatment plant.

“My profession got things going the wrong way,” Gearheart remembers. Engineers focused on the large amounts of cash available for construction grants rather than exploring the most efficient alternatives. “The construction grant money was a cash cow. In California in the 1970s, you could get 87 percent of your project paid for by a combination of federal and state money. Engineers were paid a percentage of construction costs, and had no incentive to design less costly systems.”

Gearheart doesn't remember exactly when the idea of building marshes as a combination of wildlife habitat and enhanced sewage treatment first dawned. It may have happened one day while Gearheart and Klopp were hanging out with Allen at his aquaculture pond. They looked out over the barren landscape of Mt. Trashmore, the old municipal landfill that had been condemned and capped with bay mud. Salt continued to leach out of the mud, so that nothing grew there. Beyond the gray, lumpen face of Mt. Trashmore lay a heap of decaying logs, which had been piled there years earlier, before one of the nearby lumber mills had shut down. They began to imagine what could be made out of this grim landscape: tall stems of bulrush could rise from marsh ponds that would replace the heap of rotting logs and the weedy field beyond it. Reviving this wasteland could be their safe passage out of the HBWA morass.

Soon after the brainstorming session at the fish ponds, Klopp learned that the Mountain View Sanitary District, on the eastern edge of San Francisco Bay, had constructed a small wetland fed with treated sewage. The wetland was a strategy to avoid the expensive discharge requirements imposed by the San Francisco Regional Water Quality Control Board.

Klopp drove down to Mountain View along with Hauser, Allen, and Gearheart. At the Mountain View Sanitary District, beyond the rhythmic noise of the trickling filter treatment system, where giant rotating sprinklers spread sewage over beds of piled rock, they found a quiet pond. Tucked between oil refineries, the wetland, which had been dubbed Moorhen Marsh, was ringed with bulrush and cattail and full of red-winged blackbirds and marsh wrens. Ducks and coots dabbled in the water. Though the air was tainted with the stink of the refineries, the sewage-fed marsh had formed a green oasis in the industrial landscape.

Discharges of treated sewage were allowed in San Francisco Bay, but the regional board required a dilution of 10:1 at outfall pipes. The only way to accomplish this was with a deep-water outfall, a prospect that was prohibitively expensive for the small Mountain View Sanitary District. The district would have had to build a pipeline more than two miles long to carry its discharge deep into the bay.

The San Francisco Area Basin Plan allowed exceptions to the 10:1 dilution rule if sewage discharge could be shown to create an “environmental benefit,” though that phrase was not defined. Warren and Ed Nute, father-and-son consulting engineers working for the Mountain View Sanitary District, came up with the idea of using effluent to create a wetland.

“We decided to see what would happen if effluent was put into a marsh,” says Ed. “The district hired a guy with a bulldozer, to dig ponds next to the treatment

plant.” Treated sewage flowed in, cattail and bulrush sprouted up, and birds appeared. Members of the local Audubon Society chapter began birding at the wetland and reporting rare species there.

The Mountain View Sanitary District argued that the wetland constituted an environmental benefit. “My dad testified at a lot of meetings,” remembers Ed Nute. “Regional board staff had the entrenched idea that everything should go through a deepwater outfall and be diluted. Dilution is the solution to pollution, that was their philosophy.”

Despite the mass loss of wetlands in the region, and the heavy use of Moorhen Marsh by native birds, it took years to bring the San Francisco regional board around to the idea that constructed wetlands were a valid environmental benefit. Eventually, the board developed a formal marsh policy, requiring a minimum acreage of wetlands to be developed per million gallons of effluent discharged per day. To comply, the Mountain View Sanitary District created a second, much larger wetland, known as McNabney Marsh, now home to a large flock of white pelicans and many other species.

At the time of the Arcata contingent’s visit, however, Moorhen Marsh was only a small, appealing experiment. Klopp and his companions drove home, with thoughts of their own conundrum and the peace and birdsong of the sewage marsh percolating in their minds. Gearheart understood that wetlands could improve on established lagoon and oxidation pond systems. As they grew, cattail and bulrush would absorb the nutrient load in treated sewage, while their root systems hosted microbes that would decompose organic matter. A marsh made excellent sense so far as water quality went. Moorhen Marsh had shown the Arcata group an example of a constructed wetland as a political tactic.

Gearheart, Allen, and Klopp put together a proposal for an alternative wastewater treatment scheme that would reclaim Arcata’s treated sewage by creating marsh habitat and expanding Allen’s sewage-fueled salmon aquaculture. Breaking away from the HBWA project would be a risky endeavor, warned John Corbett, the city’s attorney. Resisting the state-mandated plan was a high-stakes poker game because it meant risking the loss of millions of dollars in state and federal sewage construction funding. “If Arcata lost, they would have been bankrupt,” says Corbett, who is now a member of the regional board. “The city council members who led the fight—Hauser, Chesbro and Fairless—displayed the kind of raw courage rarely seen in local government. I haven’t seen the like of it before or since.”

The city council endorsed the proposal in February 1977, and then, as Hauser later recalled, “all hell broke loose.”⁷ Joseph had his staff deploy every possible bureaucratic tactic to block consideration of Arcata’s new alternative. Alex Fairless, Arcata’s mayor, wrote to Joseph on April 14, asking the regional board to consider the city’s new plan at its meeting on May 26. She asked that the board reinterpret the Bays and Estuaries policy to accommodate the unconventional arrangement envisioned by Gearheart, in which constructed marshes would “polish” treated wastewater flowing from the oxidation ponds, raising it to a higher water quality standard before it reached the bay. She also requested

a modification of the Basin Plan to allow Arcata to bow out of the regional system, and a recommendation that the city's project be funded under the federal Clean Water Grant Program.

Joseph wrote back immediately, dismissing the proposal as failing to demonstrate "enhancement" under the Bays and Estuaries policy and declining to give Arcata a spot on the agenda at the board's next meeting. "We sincerely urge that you renew your commitment to the local HBWA project," he wrote. Fairless fired back, insisting that the city be given a hearing in May. "Based on the information proposed in your draft report," Joseph answered, "we believe that whether your waste goes directly to the Bay or traverses a marsh composed primarily of effluent, it still constitutes waste and is still governed by the provisions of the Water Quality Control Policy for Enclosed Bays and Estuaries of California."

Hauser, Gearheart, Klopp, and Allen traveled to the Mendocino County town of Ft. Bragg and sat through the regional board's day-long April meeting before they were given a chance to plead for a hearing. "I was trying to explain the idea of reclaiming wastewater to feed a marsh," Hauser recalled. "John Hannum said, 'What are you going to do? Send it [Arcata's sewage] up in a balloon?' I answered that the purpose of a hearing was to give us a chance to explain."

Hannum and the other staffers did not budge. The members of the regional board, however, were interested citizens, rather than career bureaucrats, and some of them had great sympathy for Arcata's cause. One board member, Andrea Tuttle, was a young biologist living in Arcata, who in the past had argued against the regional sewage system because it would bring on urban sprawl. She was also concerned the system would create a real risk of intense pollution in the event of a break in the planned trans-bay sewage pipeline. Urged on by Tuttle, board members agreed to place consideration of a public hearing on Arcata's proposal on the agenda for the board's May 26 meeting.

At the May meeting in Rohnert Park, regional board staff advised against granting Arcata a public hearing. "If a hearing were allowed, Arcata would have to prove that they would enhance the bay by the development," said Ben Kor, supervising engineer for the regional board. "They have indicated it's not possible to do that." Kor quoted the board's legal counsel to make his circular argument: Enhancement had not been proven, therefore there was no reason for a hearing on the potential for enhancement.

The whole point of a hearing, Arcata's attorney answered, was to have the board itself decide whether the city could enhance the bay with its alternative plan. "The board staff has been against having a hearing whether it's enhancement or not," he said. "All we've been trying to do for two months now is get a hearing."

Board members rejected staff advice and granted Arcata a public hearing at the next scheduled meeting in late June. "We get to show our proof of what enhancement is on our terms," Hauser told a reporter. "We don't have to show it on their staff's terms."⁸ The Arcata city council, he said, believed raising fish, creating wildlife habitat, and discharging nutrients in treated wastewater would enhance the bay. He didn't have high hopes for immediate approval, but saw the hearing as a first step in the long process of fighting for their idea.

A week before the hearing, regional board staff announced that Arcata's proposal had to be recast as a formal "facilities plan," an engineering document that normally took months to prepare. Everyone involved in Arcata's sewage fight went into overdrive. "George Allen and Bob Gearheart were dictating, the city staff was typing, Alex Fairless and I were up all night," remembered Hauser. Fairless worked the photocopier in the police department, in the city hall basement, while Hauser copied and collated upstairs. Their passion for the cause had infected the clerical workers. "The secretaries were up all night with us," says Fairless, "and one of them was very pregnant. They'd find a mistake in one paragraph, and then they'd have to retype the whole page." They got the required number of copies of the facilities plan on a bus to Santa Rosa at 7 a.m., then went their separate ways in search of sleep.

The document produced by Arcata's heroic group effort failed to inspire the regional board staff. "On June 16, 1977," a staff memo reported, "staff received a 2.75 pound report entitled *City of Arcata Facility Plan and Project Report, June 1977*. Despite its bulk, the report contains very few passages which staff considers relevant to the issues to be considered at the hearing." The plan, the memo noted, contained long sections plagiarized from Arcata's General Plan and the Metcalf & Eddy report. So far as board staff were concerned, the hefty document failed to show "that water quality would be enhanced above that which would occur in the absence of discharge."⁹

Meanwhile, representatives of the other communities involved in the HBWA project resented what they saw as Arcata's effort to escape a commitment, leaving them to carry a multimillion-dollar burden. Ed Estes of McKinleyville found Hauser and the Arcata contingent condescending and irresponsible. He pointed out that his town had been pushed to make a huge investment: \$7.6 million had been spent on installing sewer pipes that still led nowhere, while McKinleyville remained under a building moratorium imposed by the regional board.

"We in McKinleyville believe in contracts and we honor them," he said, with clear disdain for Arcata's last-minute attempt to escape the HBWA agreement. "Private citizens in my community may be, as others have suggested, brush Oakies. We are mostly upper lower class, we are not horribly overeducated. But we are beginning to realize what our individual costs are from this delay."

The Humboldt County Board of Supervisors had opposed the Bays and Estuaries policy before it was adopted and had gone so far as to initiate a lawsuit against the state board, trying to stop its implementation. The county had paid over \$1 million to build sewer lines from outlying communities south of Eureka leading to a trans-bay pipeline that did not yet exist. "The county is extremely apprehensive of state and federal declarations that this regional project will resolve our wastewater problems for many years into the future," said Supervisor Erv Renner. Given the track record, Renner feared that the board might suddenly decree that discharging secondary-treated sewage to the ocean was forbidden, after pushing through the HBWA system at vast expense. But if the county and other cities on the bay were to be forced to go regional, he insisted that Arcata should have to do the same. If Arcata found an out, the county would also demand the right to jump ship.

The day of the hearing was sweltering hot at the Ukiah Fairgrounds. “It was 103 degrees in those metal buildings,” remembers Hauser. The proceedings ran for more than six hours. Four decades later, the tension of that long, overheated meeting can still be heard through the sound distortion on the warped reel-to-reel audio tape recorded by the board staff. There’s a level of emotion—resentment, hope, anger, and sorrow—startling in a bureaucratic hearing on sewage.

Joseph began by summing up his arguments against Arcata’s proposal. The city hadn’t proved that discharging effluent into a series of marshes that emptied into the bay was substantially different from dumping into the bay itself. His most crucial point he saved for last: If Arcata won release from the HBWA project, the other cities and Humboldt County would demand the same privilege. “The end result will be a continued discharge of waste into Humboldt Bay, which we have been trying to alleviate for the past ten years,” he said. Joseph’s dream of ending flows of sewage into the state’s largest biologically intact estuary would die.

Dan Hauser explained why Arcata was trying to bolt from the HBWA project when it was already so far along—ready to build, as soon as the legal wrangling with Committee for a Sewer Referendum might be resolved. Construction and operating costs were astronomical and had not been fully revealed until a few months before; the project would suck down more energy than any other facility in the county, much of it for moving sewage long distances; and the regional project clashed with provisions in the revised Clean Water Act of 1977, which endorsed water reclamation and energy conservation.

He added that Arcatans were quite serious about addressing sewage problems, as demonstrated when voters passed a recent bond issue to replace leaking sewage interceptors by a margin of 86 percent. “That’s an unheard-of majority today for the passage of a bond, and unlike our counterpart, the regional authority, we were not reluctant to submit this issue to the voters.”

Hauser’s most eloquent argument was an amateur video of islands in the brackish lake next to Mt. Trashmore, where thousands of shorebirds roosted at high tide. A Humboldt State student had climbed a utility pole and caught images of a peregrine falcon hunting over an island crowded with sandpipers. The shorebirds lifted into a hypnotic whirl of synchronized flight as they evaded the predator. The video also showed a white-tailed kite hovering as it searched for prey. The kite, a wetland-adapted raptor, was then just beginning to recover from a brush with extinction in northern California. Building marshes to treat the city’s wastewater would expand important habitat, critical to wildlife.

Gearheart explained the workings of natural sewage treatment both in the existing oxidation ponds and in the marshes Arcata hoped to create. The great advantage of this system, he emphasized, was time. The longer wastewater stayed in the ponds and marshes, the cleaner it would get. In the activated sludge process the regional board envisioned, wastewater would be retained for a matter of hours, and heavy pulses of rain could overwhelm the system, causing the release of raw sewage. A drop of wastewater would take weeks to move through the oxidation ponds and marshes Arcata proposed, and by the end of this journey, pathogens would have died off and pollutants would have been broken down.

“The natural function of a marsh is to exist in places where you have high levels of nutrients,” Gearheart assured the board. “The ability of marshes to remove BOD, ammonia, nitrate and phosphate is very high.” Marshes form in deltas and estuaries laden with nutrient-rich silt that runs off the land. Cattail and bulrush slow the flow of water, causing solids to settle out. Among their roots live a community of microbes that digest organic matter, while the plants absorb nitrogen and phosphorus. The combined oxidation pond and wetland system could be maintained for \$300,000 less per year than Arcata’s share of operating costs for the proposed HBWA project.

In Joseph’s eyes, the marsh argument was untested bunk. He seemed skeptical of the notion that marshes act as natural filters for sediment and nutrients; he doubted that humans could build a working wetland. Gearheart could claim no previous experience in marsh creation.

When George Allen rose to speak about his decade-long experiment with raising salmon in wastewater, he gave too much history; his talk came off as a litany of frustrated hopes. The first handful of adult salmon raised to smolthood in his ponds had returned only that year. Allen saw this as great progress, but Hannum couldn’t resist taunting him about the low return rates. A biologist with the Department of Fish and Game gave his devastating take on Allen’s aquaculture experiment. Summer water temperatures in the Arcata fish ponds often rose high enough to kill young salmon, if they survived exposure to high concentrations of ammonia. He saw discouraging parallels with an attempt to create a trout fishery at the Indian Lake Reservoir, built to receive treated sewage effluent flowing from developments around Lake Tahoe in the Sierras. An ammonia-stripping device had been built there, but in winter it was too cold for the thing to function, and the reservoir saw repeated mass die-offs of trout from ammonia poisoning.

Aside from a representative of the Redwood Region Audubon Society and Arcata’s people, everyone who spoke assumed that regional sewage systems were by nature more reliable and efficient than small local ones, and that they were inevitable: because the engineers had said so, because the state board was pushing for them, because the Bays and Estuaries policy enshrined them. That notion was repeated over the sweaty hours in the hearing room, until a young, shaggy-haired man walked to the podium and unleashed an eloquent critique of the whole notion of regional sewage systems in general, and the HBWA project in particular.

Wade Rose was representing the Governor’s Office of Appropriate Technology (OAT), a new niche in the state bureaucracy created by then-governor Jerry Brown. OAT’s mission was to research and promote low-energy, ecologically sound technologies. Its director was Sim Van der Ryn, a devotee of composting toilets who wrote a short, punchy book entitled *The Toilet Papers*, in which he explained that regional sewage systems separated humanity from nature in dangerous ways. It was imperative, Van der Ryn claimed, that everyone start “taking responsibility for our shit,” through radical, local means. He described pausing

during an agonized debate over the permissibility of composting toilets to feed potted plants in a state office building with odorless humus from his home composting toilet.¹⁰

“It is the opinion of this office,” Rose announced, “that the energy crisis of 1972 has left the HBWA proposal as it now stands over-planned, prohibitively expensive, and obsolete. Arcata’s project should be looked at as part of a regional answer, an answer that demonstrates innovative thinking on the part of government . . . The expense of the huge single system should never be justified because of administrative convenience or because the larger the project, the more quickly federal and state moneys will be available to build it. The ease of governmental life should never be a reason to make citizens pay more than is necessary.”

There was a brief, stunned silence after Rose finished speaking. Then John Stokes, the attorney for HBWA, began to interrogate Rose in the manner of an outraged headmaster. He accused Rose of malingering with known enemies of the HBWA project, such as Jackie Kasun. He uncovered the fact that Rose’s formal training had been in psychology rather than wastewater engineering. “You have no formal qualifications to make any statement on Arcata’s project, is that correct?” Stokes snapped.

“I’ve been studying the wastewater process extensively for over a year now,” Rose answered. “As a person, I can learn and read.” Rose, a new state employee, had dissected the psychology behind the push for regional sewage systems, and defied the word of the experts—a subversive act that outraged not only Stokes but many long-time state bureaucrats. Later in Humboldt County’s wastewater wars, when he traveled to speak on behalf of Arcata’s marsh alternative, he’d be dogged by state operatives in suits and dark glasses, who implied dire consequences if he spoke.

At the close of the hearing, the regional board’s attorney restated the Bays and Estuaries policy as the letter of the law. Andrea Tuttle, the young board member from Arcata, spoke in a tight voice. “I feel like we’re under a steamroller right now. I’m going to have to pay for this plant, and I also have to live with these people as friends, and I hope I can maintain their friendship. I find the regional plant very hard to stomach. I dislike the cost, the land use planning ramifications, I dislike piping raw sewage under the bay. The problem is that marsh treatment is an untried technology. As a friend, I would vote for Arcata, but as a responsible member of this board I cannot do it.”

When the formal vote was called, every board member expressed sympathy for Arcata, and every board member voted the city’s proposal down. By the time her name was called to vote, Tuttle had left the room in tears.

Hauser was unsurprised by the board’s decision, and ready to fight on. “We fell in love with the idea of building a marsh,” he explained. “If they’d compromised early on, the regional plant probably would have been built.” The vision of a revived wetland changed everything for the Arcata contingent and made them committed to defeating HBWA any way they could. “It came to the point,” reflects Hauser, “where we were just going to kill that sucker.”

NOTES

¹ Allen, G. H. (December 1, 1970). "The constructive use of sewage, with particular reference to fish culture." *FAO Technical conference on marine pollution and its effects on living resources and fishing* **FIR: MP/70/R-13**.

² Scott, E., Leslie Brunetta (1989). "Wastewater wars." *Kennedy School of Government Case Program* **C16-89-854.0**.

³ Kasun, J. "The Humboldt Bay Wastewater Authority East Bay Interceptor: an analysis." *Humboldt State Library Humboldt Room collection*.

⁴ Anonymous (October 14, 1976). "Bonds vote bid lost." *Times Standard*.

⁵ Anonymous (November 23, 1976). "Letter may peril HBWA grant hopes." *Eureka Times Standard*.

⁶ Bretnall, P. (1984). "Wastewater conflict on Humboldt Bay." *Humboldt Journal of Social Relations* **11**(2): 128–284.

⁷ Scott, E., Leslie Brunetta (1989). "Wastewater wars." *Kennedy School of Government Case Program* **C16-89-854.0**.

⁸ Anonymous (May 27, 1977). "Arcata will get chance to be heard by WQCB." *Times Standard*.

⁹ Ibid.

¹⁰ Van der Ryn, S. (1978). "The Toilet Papers." Santa Barbara: Capra Press